DVP-K870P/K880P

RMT-D169A/RMT-D169P/RMT-D170P

SERVICE MANUAL

Brazilian Model
Singapore Model
Saudi Arabia Model
DVP-K870P

Singapore Model
Chinese Model
DVP-K880P

SPECIFICATIONS

System
Laser: Semiconductor laser
Signal format system: NTSC/PAL
(See page 17 to switch)

Audio characteristics
Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)/ DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB (LINE OUT L/R (AUDIO) jacks only)
Harmonic distortion: 0.003%
Dynamic range: DVD VIDEO: 103 dB/ CD: 99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

Outputs and Input
(Jack name: Jack type/Output level/ Load impedance)
LINE OUT (AUDIO): Phono jack/ 2 Vrms/ 10 kilohms
DIGITAL OUT (OPTICAL): Optical output jack/-18 dBm (wave length: 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/ 0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT
(Y, P_B/C_B, P_R/C_R): Phono jack/ Y: 1.0 Vp-p, P_B/C_B, P_R/C_R: 0.7 Vp-p/75 ohms
LINE OUT (VIDEO): Phono jack/ 1.0 Vp-p 75 ohms
S VIDEO OUT: 4-pin mini DIN/ Y: 1.0 Vp-p, C: 0.3 Vp-p (PAL), 0.286 Vp-p (NTSC)/75 ohms
MIC 1/2: Phone jacks

General
Power requirements:
110-240 V AC, 50/60 Hz

Power consumption: 12 W
Dimensions (approx.):
DVP-K870P: 430 × 55.5 × 245.7 mm
DVP-K880P: 430 × 55.5 × 243.7 mm
(width/height/depth) incl. projecting parts
Mass (approx.): 2.1 kg
Operating temperature: 5°C to 35°C
Operating humidity: 25% to 80%

Supplied accessories
See page 15

Specifications and design are subject to change without notice.

DVD VIDEO COMPACT disc DIGITAL VIDEO **CD/DVD PLAYER**

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion.
   Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

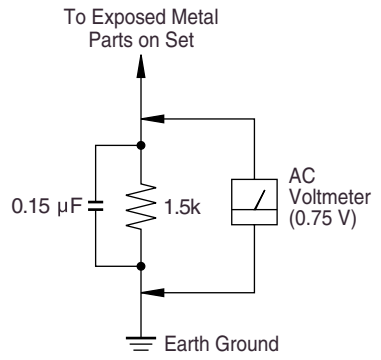


Fig.A. Using an Acvoltmeter to check AC leakage.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:
The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

LEAKAGE TEST
The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA TW-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC volmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

Unleaded solder
Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK
Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C highter than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

TABLE OF CONTENTS

SERVICE NOTE

1. Disc Removal Procedure (at POWER OFF) 4
2. Caution Point on the PWB IF-113 4

1. GENERAL

Precautions 1-1
About this Manual 1-1
This Player Can Play the Following Discs 1-1
Notes about the Discs 1-1
Index to Parts and Controls 1-1
Guide to the Control Menu Display 1-2
Hookups 1-3
Hooking Up the Player 1-3
Step 1: Unpacking 1-3
Step 2: Inserting Batteries into the Remote 1-3
Step 3: Connecting the Video Cords 1-3
Step 4: Connecting the Audio Cords 1-4
Step 5: Connecting the Power Cord 1-5
Step 6: Quick Setup 1-5
Playing Discs 1-6
Playing Discs 1-6
Resuming Playback from the Point Where You Stopped the Disc (Multi-disc Resume) 1-6
Using the DVD's Menu 1-7
Selecting “ORIGINAL” or “PLAY LIST” on a DVD-RW DISC 1-7
Playing VIDEO CD's With PBC Functions (PBC Playback) 1-7
Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play 1-7
Searching for a Scene 1-8
Searching for a Particular Point on a Disc (Search, Scan, Slow-motion Play, Freeze Frame) 1-8
Searching for a Title/Chapter/Track/Scene, etc. 1-9
Searching by Scene (PICTURE NAVIGATION) 1-9
Enjoying Karaoke 1-9
Using Karaoke 1-9
Changing the Key (Key Control) 1-10
Playing Karaoke with Any Stereo Disc (Karaoke Pon) 1-10
Turning the Vocals On and Off (Vocal) 1-10
Selecting the Vocals (Vocal Select) 1-10
Receiving Support from Recorded Vocal Track (Vocal Support) 1-11
Turning the Guide Melody On and Off (Guide Melody) 1-11
Viewing Information About the Disc 1-11
Checking the Playing Time and Remaining Time 1-11
Sound Adjustments 1-12
Changing the Sound 1-12
TV Virtual Surround Settings (TVS) 1-12
Enjoying Movies 1-13
Changing the Angles 1-13
Displaying the Subtitles 1-13
Adjusting the Playback Picture (CUSTOM PICTURE MODE) 1-13
Sharpening the Outline of an Image (SHARPNESS) .. 1-13
Playing a DATA CD 1-13
About MP3 Audio Tracks and JPEG Image Files 1-13
Playing DATA CDs with MP3 Audio Tracks and JPEG Image Files 1-14
Specifying the slideshow duration 1-15
Selecting an effect for image files in the slideshow 1-15
Using Various Additional Functions 1-15
Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL) 1-15
Controlling Your TV with the Supplied Remote 1-16
Settings and Adjustments 1-16
Using the Setup Display 1-16
Setting the Display or Sound Track Language (LANGUAGE SETUP) 1-17
Settings for the Display (SCREEN SETUP) 1-17
Custom Settings (CUSTOM SETUP) 1-17
Settings for the Sound (AUDIO SETUP) 1-17
Additional Information 1-18
Troubleshooting 1-18
Self-diagnosis Function (When letters/ numbers appear in the display 1-19
Glossary 1-19
Specifications 1-20

2. DISASSEMBLY

2-1. Upper Case 2-1
2-2. Front Panel Assembly 2-1
2-3. Loading Assembly 2-2
2-4. Optical Device (KHM-310AAA) 2-3
2-5. DC Motor and MS-203 Board 2-4
2-6. MV-044 BOARD 2-4
2-7. Switching Regulator 2-5
2-8. Interval Views 2-6
2-9. Circuit Boards Location 2-7

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram 3-1
3-2. System Control/Signal Processor Block Diagram 3-3
3-3. RF/Servo Block Diagram 3-5
3-4. Audio Block Diagram 3-7
3-5. Video Block Diagram 3-9
3-6. Interface Control Block Diagram 3-11
3-7. Power Block Diagram 3-13

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 4-1
4-2. Printed Wiring Boards and Schematic Diagrams 4-3
Waveform 4-4
- MV-044 Printed Wiring Board 4-5
- MV-044 (Drive) Schematic Diagram 4-7
- MV-044 (CPU, Servo-DSP, AVDEC) Schematic Diagram 4-9
- MV-044 (Video) Schematic Diagram 4-11
- MV-044 (Audio) Schematic Diagram 4-13
- MV-044 (PS Through) Schematic Diagram 4-15
- IF-113 Printed Wiring Board 4-17
- IF-113 (If) Schematic Diagram 4-19
- MC-147 Printed Wiring Board 4-21
- MC-147 (Mic-Echo) Schematic Diagram 4-23
- CK-139 Printed Wiring Board 4-25
- CK-139 (Key Control) Schematic Diagram 4-27
- Power Block (1501) Printed Wiring Board 4-29
- Power Block (1501) Schematic Diagram 4-31

5. IC PIN FUNCTION DESCRIPTION

5-1. System Control-Video Pin Function (MV-044 BOARD IC201) 5-1

6. TEST MODE

6-1. General Description 6-1
6-2. Starting Test Mode 6-1
6-3. Drive Manual Operation 6-1
6-4. Mirror Time Adjustment 6-1
6-5. Executing IOP Measurement 6-3
6-6. If Con Self Diagnostic Function 6-4

7. ELECTRICAL ADJUSTMENT

7-1. Power Supply Adjustment 7-1
7-2. Adjustment of Video System 7-2

8. REPAIR PARTS LIST

8-1. Exploded Views 8-1
8-1-1. Main Section 8-1
8-1-2. Mechanism Deck Assembly 8-3
8-2. Electrical Parts List 8-4

SERVICE NOTE

1. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Open dust cover to access to a hole insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck can in the direction of the arrow A. (See Fig. 1)
2) Draw out the tray in the direction of the arrow B, and remove a disc. (See Fig. 1)

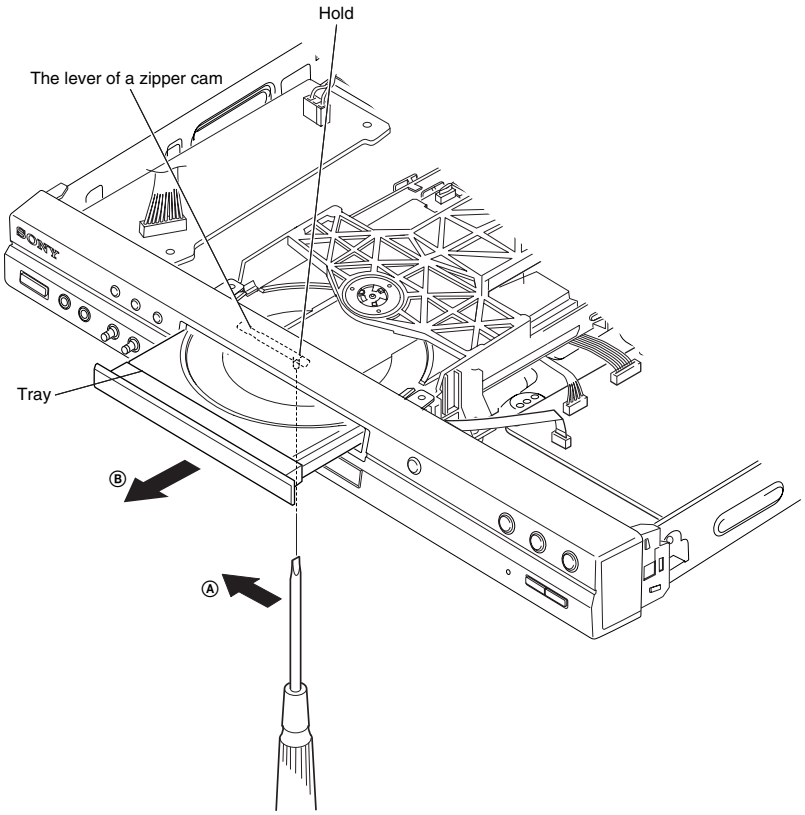


Fig. 1.

2. Caution Point on the PWB IF-113

CAUTION
When handling IF-113 PWB avoid contact with the sharp metal edge on the top side of Vacuum Fluorescent Display (ND401).

SECTION 1 GENERAL

This section is extracted from instruction manual. 2-022-377-11

Precautions

On safety

Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources

- The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.

On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.

On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma display panel televisions and projection televisions are susceptible to this.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

About this Manual

Check your model name

The instructions in this manual are for 2 models: DVP-K870P and DVP-K880P. Check your model name by looking at the front panel of the player. DVP-K870P is the model used for illustration purposes. Any difference in operation is clearly indicated in the text, for example, "DVP-K880P only."

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- "DVD" may be used as a general term for DVD VIDEOs, DVD+RWs/DVD+Rs and DVD-RWs/DVD-Rs.
- Displays on the screen are slightly different depending upon where the model is sold.
- The meaning of the icons used in this manual is described below:

Icon	Meaning
DVD-V	Functions available for DVD VIDEOs, and DVD+RWs/ DVD+Rs or DVD-RWs/DVD-Rs in video mode
DVD-RW	Functions available for DVD-RWs in VR (Video Recording) mode
VCD	Functions available for VIDEO CDs, Super VCDs, or CD-Rs/ CD-RWs in video CD format or Super VCD format
CD	Functions available for music CDs or CD-Rs/CD-RWs in music CD format
DATA CD	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks and JPEG image files)

* MP3 (MPEG 1 Audio Layer 3) is a standard format defined by ISO (International Standard Organization)/MPEG which compresses audio data.

This Player Can Play the Following Discs

Format of discs	
DVD VIDEO (page 79)	DVD VIDEO
DVD-RW (page 79)	DVD RW
VIDEO CD	COMPACT DISC DIGITAL VIDEO
Music CD	COMPACT DISC DIGITAL AUDIO

"DVD VIDEO" and "DVD-RW" are trademarks.

Note about CDs

The player can play CD ROMs/CD-Rs/CD-RWs recorded in the following formats:
- music CD format
- video CD format
- MP3 audio tracks and JPEG image files of format conforming to ISO9660* Level 1/ Level 2, or its extended format, Joliet
- KODAK Picture CD format

* A logical format of files and folders on CD-ROMs, defined by ISO (International Organization for Standardization).

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labelled with identical region codes. This system is used to protect copyrights.

DVD VIDEOs labelled (ALL) will also play on this player.

If you try to play any other DVD VIDEO, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD VIDEO, no region code indication may be labelled even though playing the DVD VIDEO is prohibited by area restrictions.

Example of discs that the player cannot play

The player cannot play the following discs:
- CD-ROMs/CD-Rs/CD-RWs other than those recorded in the formats listed on the previous page.
- CD-ROMs recorded in PHOTO CD format
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- HD layer on Super Audio CDs

Also, the player cannot play the following discs:
- A DVD VIDEO with a different region code.
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Notes

- **Notes about DVD+RWs/DVD+Rs, DVD-RWs/ DVD-Rs, or CD-Rs/CD-RWs**
  Some DVD+RWs/DVD+Rs, DVD-RWs/DVD-Rs, or CD-Rs/CD-RWs cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software.
  The disc will not play if it has not been correctly finalized. Also, images in DVD-RW disc with CPRM* protection may not be played if they contain a copy protection signal. "Copyright lock" appears on the screen. For more information, see the operating instructions for the recording device. Note that some playback functions may not work with some DVD+RWs/ DVD+Rs, even if they have been correctly finalized. In this case view the disc by normal playback. Also some DATA CDs created in Packet Write format cannot be played.
  * CPRM (Content Protection for Recordable Media) is a coding technology that protects the copyright of images.
- **Music dics encoded with copyright protection technologies**
  This product is designed to playback discs that conform to the Compact Disc (CD) standard. Recently, various music disc encoded with copyright protection technologies are marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.

Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Notes about the Discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.

- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth. Wipe the disc from the centre out.

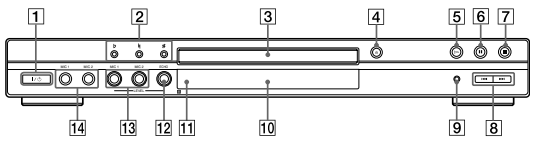
- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

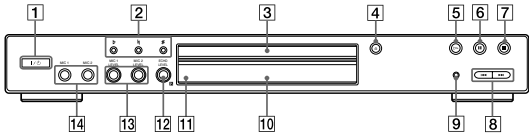
For more information, refer to the pages indicated in parentheses.

Front panel

DVP-K870P



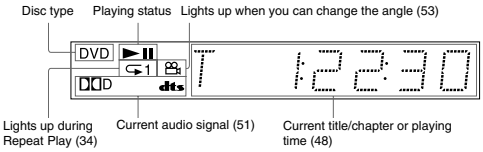
DVP-K880P



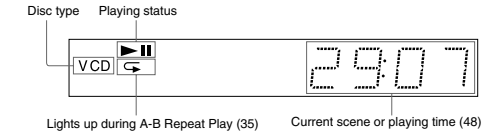
1 I/⏻ (on/standby) button (26)
2 KEY CONTROL buttons (42)
3 Disc tray (26)
4 ⏏ (open/close) button (26)
5 ▷ (play) button (26)
6 ❚❚ (pause) button (27)
7 ■ (stop) button (27)
8 ⏮/⏭ (previous/next) buttons (27)
9 PROGRESSIVE indicator (17)
Lights up when the player outputs progressive signals.
10 Front panel display (9)
11 R (remote sensor) (15)
12 ECHO LEVEL control (40)
13 MIC 1/2 (microphone) LEVEL control (40)
14 MIC 1/2 (microphone) connectors (40)

Front panel display

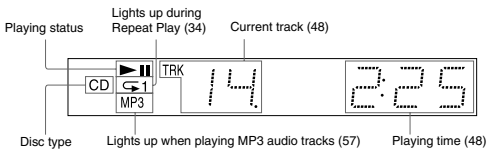
When playing back a DVD VIDEO/DVD-RW


Disc type
Playing status
Lights up when you can change the angle (53)
DVD
Lights up during Repeat Play (34)
Current audio signal (51)
Current title/chapter or playing time (48)

When playing back a VIDEO CD with Playback Control (PBC) (30)

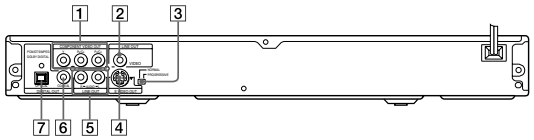


When playing back a CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)



→continued

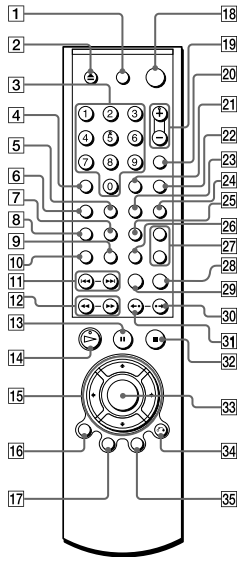
Rear panel



1 COMPONENT VIDEO OUT (Y, PB/CB, PR/CR) jacks** (16)
2 LINE OUT (VIDEO) jack* (16)
3 NORMAL/PROGRESSIVE switch** (71)
4 S VIDEO OUT jack* (16)
5 LINE OUT L/R (AUDIO) jacks (19) (20) (21)
6 DIGITAL OUT (COAXIAL) jack (20) (21) (22)
7 DIGITAL OUT (OPTICAL) jack (20) (21) (22)

* Do not set the NORMAL/PROGRESSIVE switch to PROGRESSIVE if you have connected the TV to these jacks (page 71)
**Only set NORMAL/PROGRESSIVE switch to PROGRESSIVE if you have connected a progressive signal compatible TV to the player (page 71, 75)

Remote



1 TV I/⏻ (on/standby) button (67)
2 ⏏ (open/close) button (27)
3 Number buttons (29)
The number 5 button has a tactile dot.*
4 CLEAR button (31)
5 (subtitle) button (53)
6 (audio) button (50)
7 KARAOKE PON button (43)
8 SEARCH MODE button (37)
9 VOCAL SELECT button (44)
10 VOCAL button (43)
11 ⏮/⏭ (previous/next) buttons (27)
12 ◄I ◄◄/►► I► (scan/slow) buttons (36)
13 ❚❚ (pause) button (27)
14 ▷ (play) button (26)
The ▷ button has a tactile dot.*
15 ←/↑/↓/→ buttons (29)
16 DISPLAY button (12)
17 TOP MENU button (29)
18 I/⏻ (on/standby) button (26)
19 (volume) +/– buttons (67)
The + button has a tactile dot.*
20 (TV/video) button (67)
21 TIME/TEXT button (47)
22 PICTURE MODE button (54)
23 (angle) button (53)
24 SUR (surround) button (51)
25 KARAOKE MODE button (40)
26 VOCAL SUPPORT button (45)
27 KEY CONTROL (♯-♭) buttons (42)
28 PICTURE NAVI (picture navigation) button (39, 59)
29 ZOOM button (27, 57)
30 •→/II► (instant advance/step) button (27, 36)
31 ←•/◄II (instant replay/step) button (27, 36)
32 ■ (stop) button (27)
33 ENTER button (23)
34 RETURN button (27)
35 MENU button (29)

* Use the tactile dot as a reference when operating the player.

Guide to the Control Menu Display

Use the Control Menu to select a function and to view related information. Press DISPLAY repeatedly to turn on or change the Control Menu display as follows:

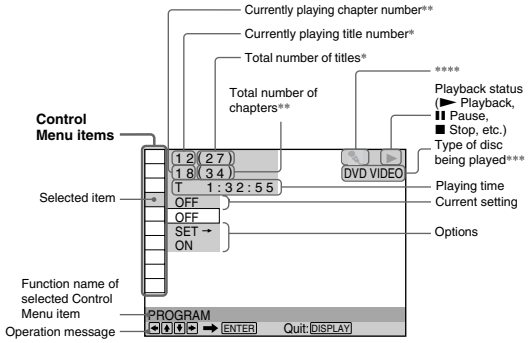
Control Menu display 1
↓
Control Menu display 2
↓
Control Menu display off

You can use the Control Menu display items for KARAOKE PON, VOCAL, VOCAL SELECT, VOCAL SUPPORT, GUIDE MELODY or KEY CONTROL when the player is in karaoke mode only. For details, see page 40.

Control Menu Display

The Control Menu display 1 and 2 will show different items depending on the disc type. For details about each item, please refer to the pages in the parentheses.

Example: Control Menu display 1 when playing a DVD VIDEO



* Displays the scene number for VIDEO CDs (PBC is on), track number for VIDEO CDs/CDs, album number for DATA CDs.
** Displays the index number for VIDEO CDs, MP3 audio track number or JPEG image file number for DATA CDs.
*** Displays Super VCD as "SVCD".
****Appears when the player is in karaoke mode.

To turn off the display
Press DISPLAY repeatedly.

List of Control Menu Items

Item	Item Name, Function, Relevant Disc Type
	TITLE (page 37)/SCENE (page 37)/TRACK (page 37) Selects the title, scene, or track to be played. DVD-V DVD-RW VCD
	CHAPTER (page 37)/INDEX (page 37) Selects the chapter or index to be played. DVD-V DVD-RW VCD
	ALBUM (page 37) Selects the album to be played. DATA CD
	DATE Displays the recorded date, etc of the current JPEG image. DATA CD
	FILE (page 38) Selects the JPEG image file to be played. DATA CD
	ORIGINAL/PLAY LIST (page 29) Selects the type of titles (DVD-RW) to be played, the ORIGINAL one, or an edited PLAY LIST. DVD-RW
	TRACK (page 37) Selects the track to be played. CD DATA CD
	TIME/TEXT (page 37) Checks the elapsed time and the remaining playback time. Input the time code for picture and music searching. Displays the DVD/CD text or the DATA CD's track name. DVD-V DVD-RW VCD CD DATA CD
	PARENTAL CONTROL (page 63) Set to prohibit playback on this player. DVD-V VCD CD
	SETUP (page 68) QUICK Setup (page 23) Use Quick Setup to choose the desired language of the on-screen display, the aspect ratio of the TV and the audio output. CUSTOM Setup In addition to the Quick Setup setting, you can adjust other various settings. RESET Returns the settings in "SETUP" to the default setting. DVD-V DVD-RW VCD CD DATA CD
	PROGRAM (page 31) Selects the title, chapter, or track to play in the order you want. DVD-V VCD CD
	SHUFFLE (page 33) Plays the title, chapter, or track in random order. DVD-V VCD CD
	REPEAT (page 34) Plays the entire disc (all titles/all tracks/all albums) repeatedly or one title/chapter/track/album repeatedly. DVD-V DVD-RW VCD CD DATA CD
	A-B REPEAT (page 35) Specifies the parts you want to play repeatedly. DVD-V DVD-RW VCD CD
	SHARPNESS (page 55) Exaggerates the outline of the image to produce a sharper picture. DVD-V DVD-RW VCD DATA CD
	MODE (MP3, JPEG) (page 59) Selects the data type; MP3 audio track (AUDIO), JPEG image file (IMAGE) or both (AUTO) to be played when playing a DATA CD. DATA CD

➡continued

	INTERVAL (page 61) Specifies the duration for which the slides are displayed on the screen. DATA CD
	EFFECT (page 62) Selects the effect to be used for changing slides during a slide show. DATA CD
	KARAOKE PON (page 43) Enjoys karaoke with a stereo-recorded disc, even if it is a non-karaoke disc, by reducing the sound of the vocals. DVD-V DVD-RW VCD CD DATA CD
	VOCAL (page 43) When playing a DVD with the Dolby Digital Karaoke format in karaoke mode, you can turn on or off the guide vocal. When playing a VIDEO CD/CD in karaoke mode, you can listen to the vocals. DVD-V VCD CD
	VOCAL SELECT (page 44) Selects different kind of vocals recorded in the disc. DVD-V VCD CD
	VOCAL SUPPORT (page 45) Plays automatically the recorded vocal when you stop singing during a song. DVD-V VCD CD
	GUIDE MELODY (page 46) Listens to the guide melody. DVD-V
	KEY CONTROL (page 42) Changes the key to suit your vocal range. DVD-V DVD-RW VCD CD DATA CD

Hint

The Control Menu icon indicator lights up in green when you select any item except "OFF." ("PROGRAM," "SHUFFLE," "REPEAT," "A-B REPEAT," "SHARPNESS," "KARAOKE PON," "VOCAL," "VOCAL SUPPORT," "GUIDE MELODY" only). The "ORIGINAL/PLAY LIST" indicator lights up in green when you select "PLAY LIST".

Hooking Up the Player

Follow Steps 1 to 6 to hook up and adjust the settings of the player.

Notes

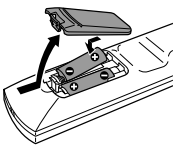
- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the power cord (mains lead) of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
- Audio/video cord (pinplug × 3 ⟷ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size R6 (AA) batteries (2)

Step 2: Inserting Batteries into the Remote

You can control the player using the supplied remote. Insert two size R6 (AA) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor on the player.



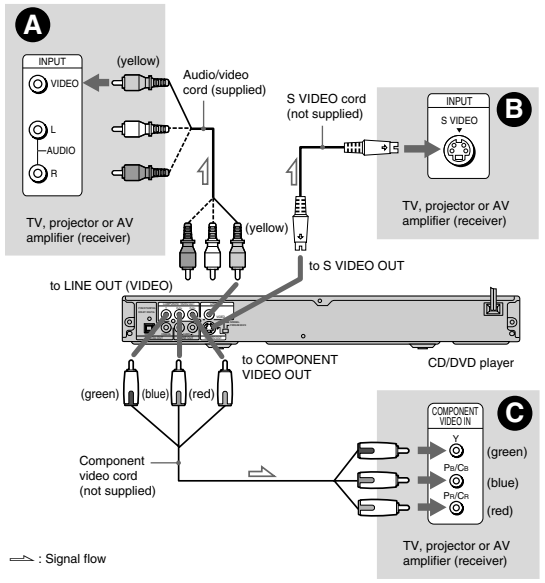
Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or a lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

➡continued

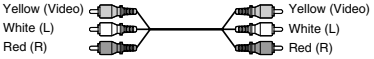
Step 3: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns A through C. In order to view progressive signal (525p or 625p) pictures with a compatible TV, projector, or monitor, you must use connection C according to the input jack on your TV monitor, projector, or AV amplifier (receiver).



A If you are connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.



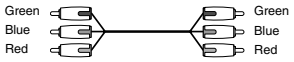
Use the red and white plugs to connect to the audio input jacks (page 19). (Do this if you are connecting to a TV only.)

B If you are connecting to an S VIDEO input jack

Connect an S VIDEO cord (not supplied). You will enjoy high quality images.

C If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, P_B/C_B, P_R/C_R)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate colour reproduction and high quality images.
If your TV accepts progressive 525p/625p format signals, use this connection and set the NORMAL/PROGRESSIVE switch on the rear panel to PROGRESSIVE (page 71). The PROGRESSIVE indicator lights up when the player outputs progressive signals.



When connecting to a wide screen TV

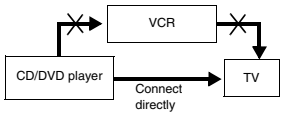
Depending on the disc, the image may not fit your TV screen. If you want to change the aspect ratio, please refer to page 70.

To change the colour system

The colour system of the player is set to NTSC or PAL. If the on-screen display of the player does not appear on the TV, change the colour system of the player (PAL or NTSC) so that a picture appears on your TV. To change the colour system, hold I/⏻ down for a few seconds while pressing ❚❚ on the player.

Notes

- Connect the player directly to the TV. If you pass the player signals via the VCR, you may not receive a clear image on the TV screen.



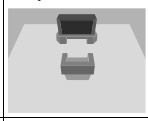
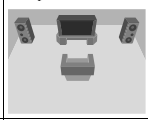
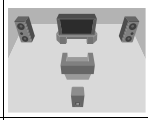
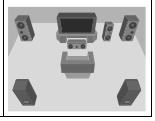
- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In case of 525 or 625 progressive scan picture problems, it is recommended that the user switch the connection to the 'standard definition' output. If there are questions regarding our TV set compatibility with this model 525p and 625p DVD player, please contact our customer service centre.

Step 4: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

Select a connection

Select one of the following connections, A through D.

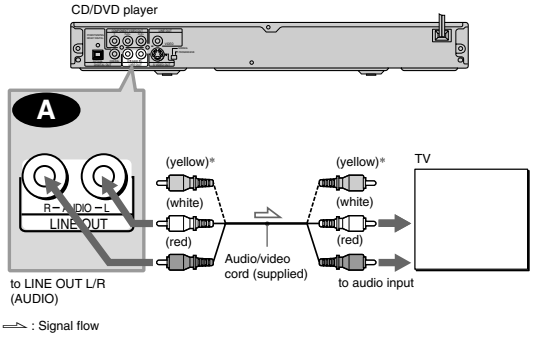
Components to be connected	Connection	Your setup
TV • Surround effects: TVS DYNAMIC (page 52), TVS WIDE (page 52)	A (page 19)	example 
Stereo amplifier (receiver) and two speakers • Surround effects: TVS STANDARD (page 52) or **MD deck/DAT deck** • Surround effects: TVS STANDARD (page 52).	B (page 20)	example 
AV amplifier (receiver) having a Dolby* Surround (Pro Logic) decoder and 3 to 6 speakers • Surround effects: Dolby Surround (Pro Logic) (page 78)	C (page 21)	example 
AV amplifier (receiver) with a digital input jack having a Dolby Digital, MPEG audio, or DTS decoder and 6 speakers** • Surround effects: – Dolby Digital (5.1ch) (page 78) – DTS (5.1ch) (page 78) – MPEG audio (5.1 ch) (page 79)	D (page 22)	example 

Hint
If you connect an AV amplifier (receiver) that conforms to the 96 kHz sampling frequency, use connection D.

* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.
** "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

A Connecting to your TV

This connection will use your TV's speakers for sound.



: Signal flow

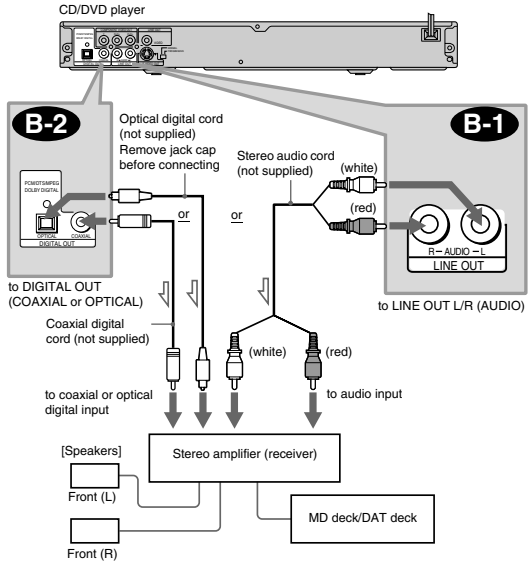
* The yellow plug is used for video signals (page 16).

Hint
When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

→continued

B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

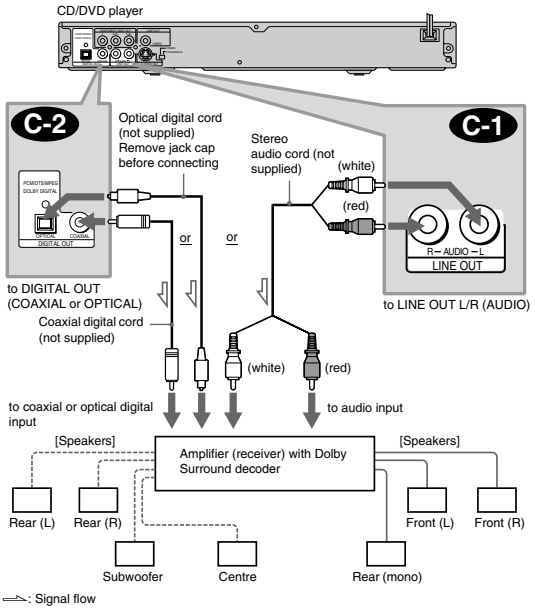
If the stereo amplifier (receiver) has audio input jacks L and R only, use B-1. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use B-2. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).



: Signal flow

C Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.
If your amplifier (receiver) has L and R audio input jacks only, use C-1. If your amplifier (receiver) has a digital input jack, use C-2.



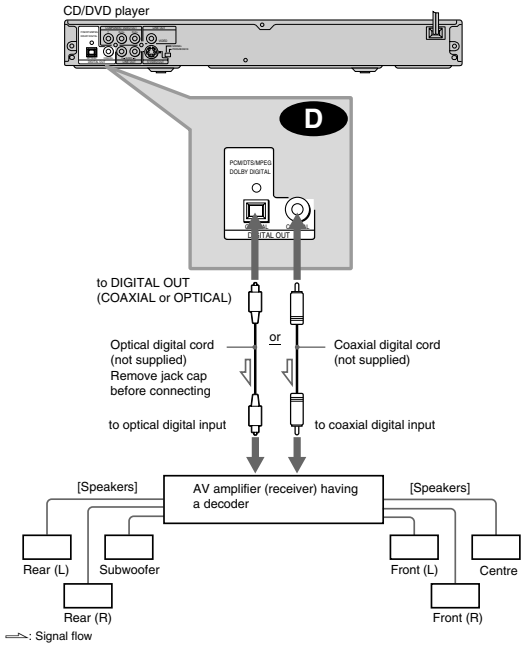
Note

When connecting 6 speakers, replace the monaural rear speaker with a centre speaker, 2 rear speakers and a subwoofer.

→continued

D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital, MPEG audio or DTS decoder and 6 speakers

This connection will allow you to use the Dolby Digital, MPEG audio or DTS decoder function of your AV amplifier (receiver).



Hint

Use connection D when connecting to 7 or more speakers (6.1 ch or more).

Notes

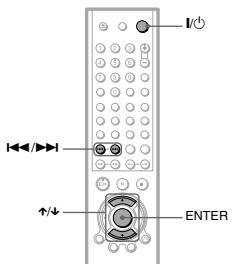
- After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON" in Quick Setup (page 24). If your AV amplifier (receiver) has an MPEG audio decoder function, set "MPEG" to "MPEG" (page 74). Otherwise, no sound or a loud noise will come from the speakers.
- In order to listen to DTS sound tracks, you must use this connection. DTS sound tracks are not output through the LINE OUT L/R (AUDIO) jacks, even if you set "DTS" to "ON" in Quick Setup (page 24).
- When you connect an amplifier (receiver) that conforms to the 96 kHz sampling frequency, set "48kHz/96kHz PCM" in "AUDIO SETUP" to "96kHz/24bit" (page 72).

Step 5: Connecting the Power Cord

Plug the player and TV power cords (mains lead) into an AC outlet (mains).

Step 6: Quick Setup

Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press ▶▶|. To return to the previous adjustment, press |◀◀.



1 Turn on the TV.

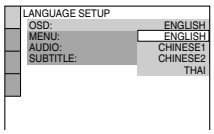
2 Press I/⏻.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

"Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Menu to run Quick Setup (page 69).

4 Press ENTER without inserting a disc.

The Setup Display for selecting the language used in the on-screen display appears.

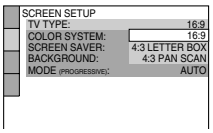


5 Press ↑/↓ to select a language.

The player uses the language selected here to display the menu and subtitles as well.

6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.



7 Press ↑/↓ to select the setting that matches your TV type.

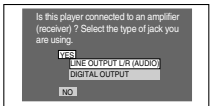
◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
- 16:9 (page 70)

◆ If you have a 4:3 standard TV
- 4:3 LETTER BOX or 4:3 PAN SCAN (page 70)

→continued

8 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.


Is this player connected to an amplifier (receiver) ? Select the type of jack you are using.
DTS
LINE OUTPUT L/R (AUDIO)
DIGITAL OUTPUT
NO

9 Press ↑/↓ to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

Choose the item that matches the audio connection you selected on pages 19 to 22 (A through D).

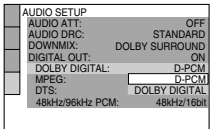
A
- If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.

B-1 C-1
- Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.

B-2 C-2 D
- Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

10 Press ↑/↓ to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

Choose the signal that matches the audio connection you selected on pages 20 to 22 (B through D).

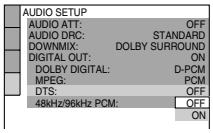


B-2 C-2
- D-PCM (page 73)

D
- DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 73)

11 Press ENTER.

"DTS" is selected.



12 Press ↑/↓ to select whether or not you wish to send a DTS signal to your amplifier (receiver).

Choose the item that matches the audio connection you selected on pages 20 to 22 (B through D).

B-2 C-2
- OFF (page 74)

D
- ON (only if the amplifier (receiver) has a DTS decoder) (page 74)

13 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.
If your AV amplifier (receiver) has an MPEG audio decoder, set "MPEG" to "MPEG" (page 74).

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 20 to 22 (B through D). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 68 for using the Setup Display.

Audio Connection (pages 19 to 22)

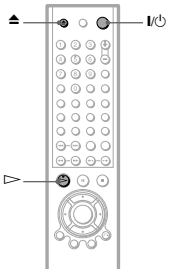
A
- No additional settings are needed.

B-1 C-1
- Set "DOWNMIX" to "DOLBY SURROUND" (page 73)
- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 72)

B-2 C-2 D
- Set "DOWNMIX" to "DOLBY SURROUND" (page 73)
- Set "DIGITAL OUT" to "ON" (page 73)

Playing Discs DVD-V DVD-RW VCD CD DATA CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.



1 Turn on your TV.

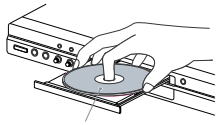
2 Press I/⏻.

The player turns on.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

◆ **When using an amplifier (receiver)**
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

4 Press ⏏ on the player, and place a disc on the disc tray.



With the playback side facing down

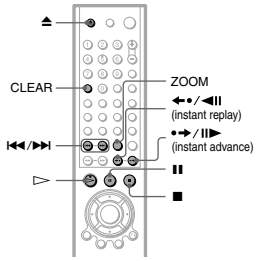
5 Press ▷.

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).
Depending on the disc, a menu may appear on the TV screen. For DVD VIDEOs, see page 29. For VIDEO CDs, see page 30.

To turn off the player
Press I/⏻. The player enters standby mode.

Hint
The player will turn off automatically whenever you leave it in stop mode for more than 30 minutes.

Additional operations



To	Operation
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷
Go to the next chapter, track, or scene in continuous play mode	Press ▶▶I
Go back to the previous chapter, track, or scene in continuous play mode	Press I◀◀
Stop play and remove the disc	Press ⏏
Replay the previous scene*	Press ←•/◀II (instant replay) during playback
Briefly fast forward the current scene**	Press •→/II▶ (instant advance) during playback
Magnify the image***	Press ZOOM repeatedly Press CLEAR to cancel

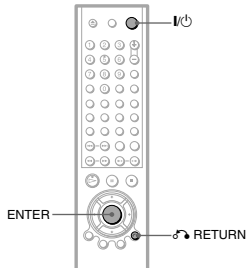
* For DVD VIDEOs and DVD-RWs/DVD-Rs only
** For DVD VIDEOs and DVD-RWs/DVD-Rs or DVD+RWs only
***For Video and JPEG pictures only (except BACKGROUND pictures). You can move the enlarged picture using ←/↑/↓/→. Depending upon the contents of the disc, the zoom function may be cancelled automatically when the picture is moved.

Hints
- The Instant Replay function is useful when you want to review a scene or dialog that you missed.
- The Instant Advance function is useful when you want to pass over a scene that you don't want to watch.

Note
You may not be able to use the Instant Replay or Instant Advance function with some scenes.

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.



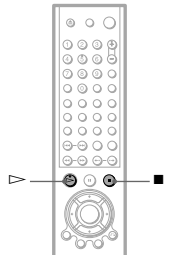
When the player is in standby mode, press RETURN, ENTER, and then I/⏻ on the remote.
The player turns on and "LOCKED" appears on the front panel display.
The ⏏ button on the player or the remote does not work while the Child Lock is set.

To unlock the disc tray
When the player is in standby mode, press RETURN, ENTER, and then I/⏻ again.

Note
Even if you select "RESET" under "SETUP" in the Control Menu (page 69), the disc tray remains locked.

Resuming Playback from the Point Where You Stopped the Disc (Multi-disc Resume) DVD-V VCD

The player stores the point where you stopped the disc for up to 6 discs and resumes playback the next time you insert the same disc. When you store a resume playback point for the seventh disc, the resume playback point for the first disc is deleted.



1 While playing a disc, press ■ to stop playback.

"RESUME" appears on the front panel display.

2 Press ▷.

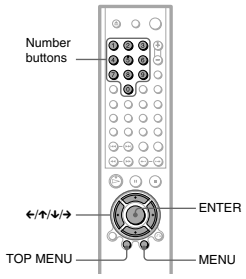
The player starts playback from the point where you stopped the disc in Step 1.

Hint
To play from the beginning of the disc, press ■ twice, then press ▷.

Notes
- "MULTI-DISC RESUME" in "CUSTOM SETUP" must be set to "ON" (default) for this function to work (page 72).
- The resume playback point for the current disc is cleared when:
  – you change the play mode.
  – you change the settings on the Setup Display.
- For DVD-RWs in VR mode, CDs and DATA CDs, the player remembers the resume playback point for the current disc.
  The resume point is cleared when:
  – you eject the disc.
  – you disconnect the power cord.
  – the player enters standby mode (DATA CD only).
- Resume Play does not work during Shuffle Play and Programme Play.
- This function may not work with some discs.
- If "MULTI-DISC RESUME" in "CUSTOM SETUP" is set to "ON" and you playback a recorded disc such as DVD-RW, the player may playback other recorded discs from the same resume point. To play from the beginning, press ■ twice and then press ▷.

Using the DVD's Menu DVD-V

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button.
When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.



1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen. The contents of the menu vary from disc to disc.

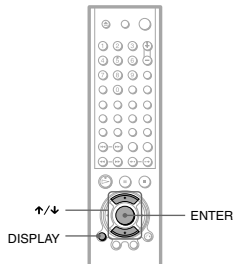
2 Press ←/↑/↓/→ or the number buttons to select the item you want to play or change.

If you press the number buttons, the following display appears.
Press the number buttons to select the item you want.

3 Press ENTER.

Selecting "ORIGINAL" or "PLAY LIST" on a DVD-RW Disc DVD-RW

Some DVD-RW in VR (Video Recording) mode have two types of titles for playback: originally recorded titles (ORIGINAL) and titles that can be created on recordable DVD players for editing (PLAY LIST). You can select the type of titles to be played.

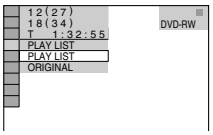


1 Press DISPLAY in stop mode.

The Control Menu appears.

2 Press ↑/↓ to select (ORIGINAL/PLAY LIST), then press ENTER.

The options for "ORIGINAL/PLAY LIST" appear.



➡continued

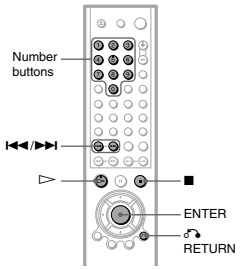
3 Press ↑/↓ to select the setting.

- PLAY LIST: plays the titles created from "ORIGINAL" for editing.
- ORIGINAL: plays the titles originally recorded.

4 Press ENTER.

Playing VIDEO CDs with PBC Functions (PBC Playback) VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

2 Select the item number you want by pressing the number buttons.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

To return to the menu
Press ↶ RETURN.

Hint
To play without using PBC, press I◄◄/►►I or the number buttons while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

Note

Depending on the VIDEO CD, "Press ENTER" in Step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.

Various Play Mode Functions (Programme Play, Shuffle Play, Repeat Play, A-B Repeat Play)

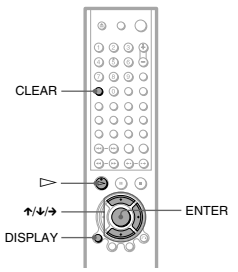
You can set the following play modes:
- Programme Play (page 31)
- Shuffle Play (page 33)
- Repeat Play (page 34)
- A-B Repeat Play (page 35)

Note

The play mode is cancelled when:
– you open the disc tray.
– the player enters standby mode by pressing I/⏻.

Creating your own programme (Programme Play) DVD-V VCD CD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own programme. You can programme up to 99 titles, chapters, and tracks.



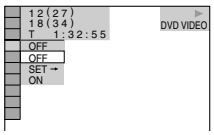
1 Press DISPLAY.

The Control Menu appears.

2 Press ↑/↓ to select (PROGRAM), then press ENTER.

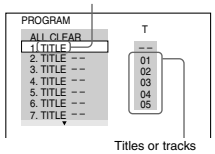
The options for "PROGRAM" appear.

➡continued



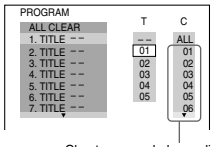
3 Press ↑/↓ to select "SET →," then press ENTER.

"TRACK" is displayed when you play a VIDEO CD or CD.



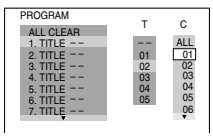
4 Press →.

The cursor moves to the title or track row "T" (in this case, "01").

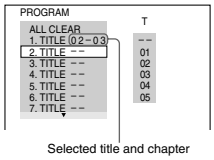


5 Select the title, chapter, or track you want to programme.

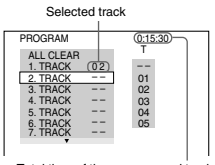
◆ When playing a DVD VIDEO
For example, select chapter "03" of title "02."
Press ↑/↓ to select "02" under "T," then press ENTER.



Next, press ↑/↓ to select "03" under "C," then press ENTER.



◆ When playing a VIDEO CD or CD
For example, select track "02."
Press ↑/↓ to select "02" under "T," then press ENTER.



6 To programme other titles, chapters, or tracks, repeat Steps 4 to 5.

The programmed titles, chapters, and tracks are displayed in the selected order.

7 Press ▷ to start Programme Play.

Programme Play begins.
When the programme ends, you can restart the same programme again by pressing ▷.

To return to normal play
Press CLEAR, or select "OFF" in Step 3. To play the same programme again, select "ON" in Step 3 and press ENTER.

To change or cancel a programme

1 Follow Steps 1 and 3 of "Creating your own programme (Programme Play)."

2 Select the programme number of the title, chapter, or track you want to change or cancel using ↑/↓, and press →.

3 Follow Step 5 for new programming. To cancel a programme, select "--" under "T," then press ENTER.

To cancel all the titles, chapters, or tracks in the programmed order

1 Follow Steps 1 through 3 of "Creating your own programme (Programme Play)."

2 Press ↑ and select "ALL CLEAR."

3 Press ENTER.

Hint

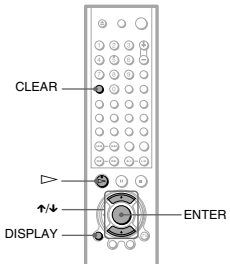
You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Programme Play, follow the steps of "Repeat Play" (page 34) or "Shuffle Play" (page 33).

Note

You cannot use this function with VIDEO CDs or Super VCDs with PBC playback.

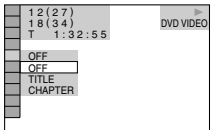
Playing in random order (Shuffle Play) DVD-V VCD CD

You can have the player "shuffle" titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.



1 Press DISPLAY during playback.
The Control Menu appears.

2 Press ↑/↓ to select (SHUFFLE), then press ENTER.
The options for "SHUFFLE" appear.



3 Press ↑/↓ to select the item to be shuffled.

◆ **When playing a DVD VIDEO**
- TITLE
- CHAPTER

◆ **When playing a VIDEO CD or CD**
- TRACK

◆ **When Programme Play is activated**
- ON: shuffles titles, chapters, or tracks selected in Programme Play.

4 Press ENTER.
Shuffle Play starts.

→continued

To return to normal play

Press CLEAR, or select "OFF" in Step 3.

Hints
- You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press ▷. Shuffle Play starts.
- Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

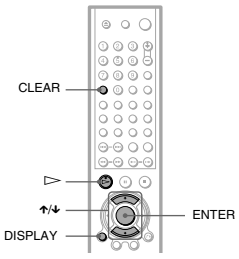
Note

You cannot use this function with VIDEO CDs or Super VCDs with PBC playback.

Playing repeatedly (Repeat Play)

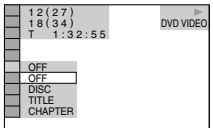
DVD-V DVD-RW VCD CD DATA CD

You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.
You can use a combination of Shuffle or Programme Play modes.



1 Press DISPLAY during playback.
The Control Menu appears.

2 Press ↑/↓ to select (REPEAT), then press ENTER.
The options for "REPEAT" appear.



3 Press ↑/↓ to select the item to be repeated.

◆ **When playing a DVD VIDEO**
- DISC: repeats all of the titles.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

◆ **When playing a DVD-RW**
- DISC: repeats all the titles of the selected type.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

◆ **When playing a VIDEO CD or CD**
- DISC: repeats all of the tracks.
- TRACK: repeats the current track.

◆ **When playing a DATA CD (JPEG image)**
- DISC: repeats all of the albums.
- ALBUM: repeats the current album.

◆ **When playing a DATA CD (MP3 audio)**
- DISC: repeats all of the albums.
- ALBUM: repeats the current album.
- TRACK: repeats the current track.

◆ **When playing a DATA CD (MP3 audio and JPEG image)**
- DISC: repeats all of the albums.
- ALBUM: repeats the current album.
- TRACK: repeats the current track (MP3 audio).

◆ **When Programme Play or Shuffle Play is activated**
- ON: repeats Programme Play or Shuffle Play.

4 Press ENTER.
Repeat Play starts.

To return to normal play

Press CLEAR, or select "OFF" in Step 3.

Hint

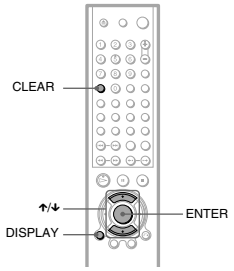
You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press ▷. Repeat Play starts.

Notes
- You cannot use this function with VIDEO CDs or Super VCDs with PBC playback.
- When repeating a DATA CD which contains MP3 audio tracks and JPEG image files, and their playing time are not the same, the sound will not match the image file.

Repeating a specific portion (A-B Repeat Play)

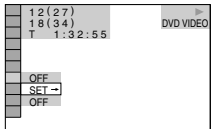
DVD-V DVD-RW VCD CD

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)

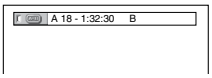


1 Press DISPLAY during playback.
The Control Menu appears.

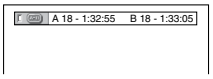
2 Press ↑/↓ to select (A-B REPEAT), then press ENTER.
The options for "A-B REPEAT" appear.



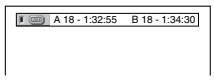
3 Press ↑/↓ to select "SET →," then press ENTER.
The "A-B REPEAT" setting bar appears.



4 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.



5 When you reach the ending point (point B), press ENTER again.
The set points are displayed and the player starts repeating this specific portion.



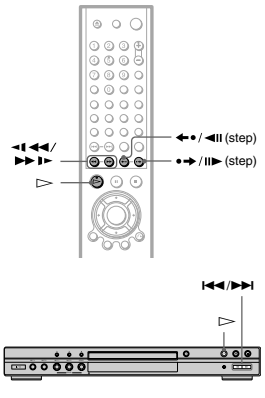
To return to normal play

Press CLEAR, or select "OFF" in Step 3.

Notes
- When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Programme Play are cancelled.
- A-B Repeat Play does not work across multiple titles.

Searching for a Particular Point on a Disc (Search, Scan, Slow-motion Play, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.



Notes
- Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.
- For DATA CDs, you can search for a particular point only on an MP3 audio track.

Locating a point quickly using the previous/next buttons (Search) DVD-V DVD-RW VCD CD DATA CD

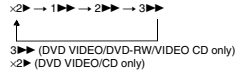
You can search for a particular point on a disc using I◄◄ /►►I on the player.
During playback, press and hold ►►I on the player to locate a point in the playback direction, or press and hold I◄◄ to locate a point in the opposite direction. When you find the point you want, release the button to return to normal playback speed.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

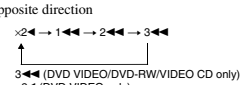
DVD-V DVD-RW VCD CD DATA CD

Press ◄▮ ◄◄ or ►► ▮► while playing a disc. When you find the point you want, press ▷ to return to normal speed. Each time you press ◄▮ ◄◄ or ►► ▮► during scan, the playback speed changes. With each press the indication changes as shown below. Actual speeds may differ with some discs.

Playback direction



Opposite direction



The "×2►"/"×2◄" playback speed is about twice the normal speed. The "3►►"/"3◄◄" playback speed is faster than "2►►"/"2◄◄" and the "2►►"/"2◄◄" playback speed is faster than "1►►"/"1◄◄."

Watching frame by frame (Slow-motion play) DVD-V DVD-RW VCD

Press ◄❚ ◄◄ or ►► ❚► when the player is in pause mode. To return to the normal speed, press ▷.
Each time you press ◄❚ ◄◄ or ►► ❚► during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
2 ❚► ⟷ 1 ❚►

Opposite direction (DVD only)
2 ◄❚ ⟷ 1 ◄❚

The "2 ❚►"/"2 ◄❚" playback speed is slower than "1 ❚►"/"1 ◄❚."

Playing one frame at a time (Freeze Frame) DVD-V DVD-RW VCD

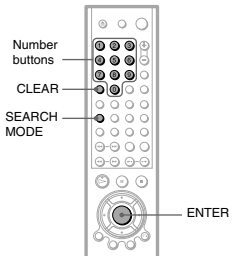
When the player is in the pause mode, press ●➔/❚❚► (step) to go to the next frame. Press ◄●/◄❚❚ (step) to go to the preceding frame (DVD only). To return to normal playback, press ▷.

Note

You cannot search for a still picture on a DVD-RW in VR mode.

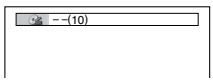
Searching for a Title/ Chapter/Track/Scene, etc. DVD-V DVD-RW VCD CD DATA CD

You can search a DVD by title or chapter, and you can search a VIDEO CD/CD/DATA CD by track, index, or scene. As titles and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code.



1 Press SEARCH MODE.

The following display appears.
"-- (∗∗)" appears next to the icon (∗∗ refers to a number).
The number in parentheses indicates the total number of titles, tracks, indexes, scenes, etc. of the disc.



2 Press SEARCH MODE repeatedly to select the search method.

◆ **When playing a DVD VIDEO/DVD-RW**
TITLE
CHAPTER
TIME/TEXT

Select "TIME/TEXT" to search for a starting point by inputting the time code.

◆ **When playing a VIDEO CD or Super VCD without PBC Playback**
TRACK
INDEX

◆ **When playing a VIDEO CD or Super VCD with PBC Playback**
SCENE

◆ **When playing a CD**
TRACK

◆ **When playing a DATA CD (MP3 audio)**
ALBUM
TRACK

◆ **When playing a DATA CD (JPEG file)**
ALBUM
FILE

3 Select the number of the title, track, scene, time code, etc. you want by pressing the number buttons to select the digit.

For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, select "TIME/TEXT" in Step 2 and enter "2:10:20."

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

4 Press ENTER.

The player starts playback from the selected number.

To turn off the display
Press SEARCH MODE repeatedly until the display is turned off.

Hints

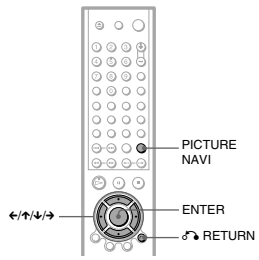
- You can display the first scene of titles, chapters or tracks recorded on the disc on a screen divided into 9 sections. You can start playback directly by selecting one of the scenes. For details, see "Searching by Scene" (PICTURE NAVIGATION)" on page 39.
- When the Control Menu display is turned off, you can search for a chapter (DVD VIDEO/DVD-RW) or track (CD) by pressing the number buttons and ENTER.

Notes

- The title, chapter, or track number displayed is the same number recorded on the disc.
- You cannot search for a scene on a DVD+RW using the time code.

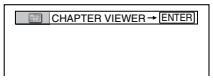
Searching by Scene (PICTURE NAVIGATION) DVD-V VCD

You can divide the screen into 9 subscreens and find the desired scene quickly.



1 Press PICTURE NAVI during playback.

The following display appears.

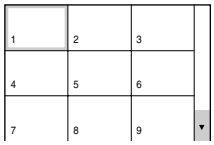


2 Press PICTURE NAVI repeatedly to select the item.

- CHAPTER VIEWER (for DVD VIDEO only)
- TITLE VIEWER (for DVD VIDEO only)
- TRACK VIEWER (for VIDEO CD only)

3 Press ENTER.

The first scene of each chapter, title, or track appears as follows.



4 Press ←/↑/↓/→ to select a chapter, title, or track, and press ENTER.

Playback starts from the selected scene.

To return to normal play
Press ↶ RETURN.

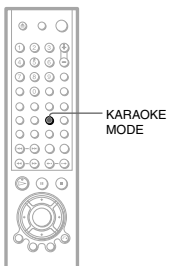
Hint
If there are more than 9 titles, chapters, or tracks, ▼ is displayed at the bottom right of the screen.
To display the additional titles, chapters, or tracks, select the bottom scene and press ↓. To return to the previous scene, select the top scene and press ↑.

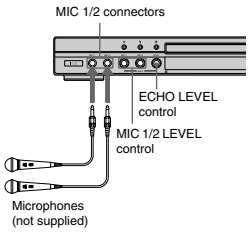
Note

Depending on the disc, you may not be able to select some items.

Using Karaoke

You can enjoy karaoke (singing along with a disc) by setting this player to karaoke mode. You can connect up to two microphones (not supplied) to the player.





Setting the player to karaoke mode

The player enters karaoke mode when a microphone is plugged into the MIC 1 or 2 connector.
The player exits from karaoke mode when you disconnect the microphones from both of the MIC 1 and 2 connectors. You may also switch karaoke mode on or off by pressing KARAOKE MODE on the remote.

When you turn the karaoke mode on with DVDs or Super VCDs, the karaoke play is performed with the audio channel you selected using ⊂⊃ (audio) button (page 50). With CDs or VIDEO CDs, the Audio setting automatically changes to "1/L" so that only the accompaniment is played when you turn the karaoke mode on. If the vocal audio is heard with some discs, select the audio channel for the karaoke play using ⊂⊃ (audio) button (page 50).

Adjusting the microphone

1 Set the MIC 1/2 LEVEL control of the MIC connector to MIN.

2 Plug a microphone (not supplied) into the MIC connector.
When a microphone is connected to the MIC 1 or 2 connector, the player enters karaoke mode.

3 Set the ON/OFF switch on the microphone to ON and turn the MIC 1/2 LEVEL control to adjust the microphone volume.

4 Turn the ECHO LEVEL control to adjust the echo.

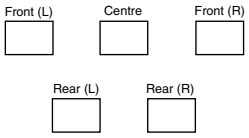
Hint
If howling occurs:
– move the microphone away from the speakers.
– lower the MIC 1/2 LEVEL or ECHO LEVEL.
– lower the overall volume.

Notes
- The sound input from the microphone is not output from the DIGITAL OUT (OPTICAL and COAXIAL) connectors.
- You can turn the karaoke mode off even when a microphone is connected to the MIC 1 or 2 connectors by pressing KARAOKE MODE on the remote. You can use the microphone only when you set to KARAOKE MODE : ON.

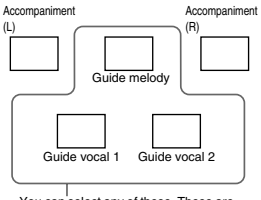
Dolby Digital Karaoke format DVD-V

Dolby Digital format, which reproduces surround sound using 5 channels, can also contain the "Dolby Digital Karaoke" format which is specialized for karaoke. In the Dolby Digital Karaoke format discs, guide melody and guide vocal tracks are recorded in addition to the accompaniment. You can select them when the player is in karaoke mode.

Speaker output in normal Dolby Digital format (5 channel surround)



Speaker output in Dolby Digital Karaoke format



You can select any of these. These are output from the front speakers (L, R).

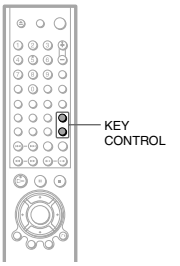
You can check the audio information using (audio) button (page 50). When playing a Dolby Digital Karaoke disc, "♪" appears at the current audio format (page 51).
Example:

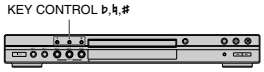
DOLBY DIGITAL ♪ 3/2

2/0: Recorded only with accompaniment.
3/0: Recorded with guide melody.
3/1: Recorded with guide melody and guide vocal.
3/2: Recorded with guide melody and two kinds of guide vocals.

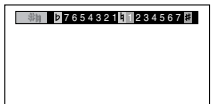
Changing the Key (Key Control) DVD-V DVD-RW VCD CD DATA CD

You can change the key to suit your vocal range.
While playing karaoke, press one of the KEY CONTROL buttons repeatedly to find the key that suits your vocal range.





1 Press KEY CONTROL while playing a disc in karaoke mode.
The following display appears.



2 Press KEY CONTROL repeatedly to select the desired vocal range.

To	Press
Raise the key	♯
Lower the key	♭
Return to the original key	♮

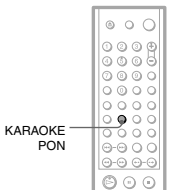
You can adjust the key in 15 half-tone steps (7 steps higher, 7 steps lower and the original key).

Hints
- The key automatically returns to the original key when:
– You turn off the power
– You remove the disc
– The title or track changes
- You can change the key using "KEY CONTROL" in the Control Menu display, by pressing ↑/↓, and then press ENTER.

Notes
- Depending on the discs, you may not be able to do the operations above.
- Natural key is on the front panel only.

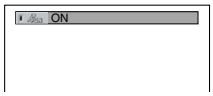
Playing Karaoke with Any Stereo Disc (Karaoke Pon) DVD-V DVD-RW VCD CD DATA CD

You can enjoy karaoke with a stereo-recorded disc, even if it is a non-karaoke disc, by reducing the sound of the vocals.



Press KARAOKE PON while playing a disc in karaoke mode

The following display appears.



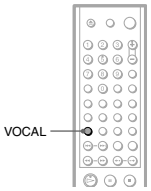
To cancel the karaoke function
Press KARAOKE PON again.

Hint
You can turn the Karaoke Pon function on and off by selecting "KARAOKE PON" in the Control Menu display using ↑/↓, and then press ENTER.

Notes
- This function may not work well in the following cases:
– Only a few instruments are playing
– A duet is playing
– The vocals on the disc deviate from the centre
– Monaural-recorded discs (the accompaniment is also reduced)
– Multiplex
- During the Karaoke Pon mode, the stereo effect is reduced.

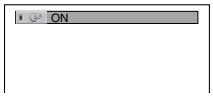
Turning the Vocals On and Off (Vocal) DVD-V VCD CD

When playing a DVD with the Dolby Digital Karaoke format in karaoke mode, you can turn on or off the guide vocal recorded in the karaoke track.
When playing a VIDEO CD/CD in karaoke mode, you can listen to the vocals.



Press VOCAL while playing a disc in karaoke mode

The following display appears.



◆When playing a DVD VIDEO
You can listen to the guide vocal recorded in the Dolby Digital karaoke format track.

Notes
- This function works only with the Dolby Digital Karaoke format.
- If the guide vocal is not recorded on the disc, you cannot use the Vocal function.

◆When playing a VIDEO CD or CD
When VIDEO CDs and CDs are played in karaoke mode, the audio output automatically changes so that only the left channel (accompaniment track) is played and output from both front speakers (L, R).
You can listen to the vocals by pressing VOCAL while the accompaniment is being played.

→continued

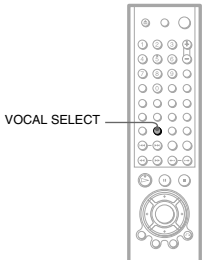
To cancel the guide vocal
Press VOCAL again.

Hint
You can turn the Vocal Support function on and off using "VOCAL" in the Control Menu display using ↑/↓, and then pressing ENTER.

Notes
- When you turn the Vocal function on, the Vocal Support function is automatically turned off (page 45).
- When you turn the Vocal function on and off while playing a Super VCD, the sound may cut off for a moment.

Selecting the Vocals (Vocal Select) DVD-V VCD CD

After you have set Vocal (page 43) or Vocal Support (page 45) to ON, you can change the guide vocal channel. You can select different kinds of vocals when using the Vocal or Vocal Support function.



1 Press VOCAL SELECT while playing a disc in karaoke mode.
The following display appears.

2 Press VOCAL SELECT repeatedly to select the desired vocal channel.
The output channel changes as follows. The default setting is underlined.

◆ When playing a DVD VIDEO

1+2 (Guide vocal 1+2)
↓
1 (Guide vocal 1)
↓
2 (Guide vocal 2)

◆ When playing a VIDEO CD or CD

L+R (same sound is output from both speakers)
↓
STEREO (The standard stereo sound)

◆ When playing a Super VCD

1:L+R
↓
1:STEREO (The stereo sound of the audio track 1)
↓
2:L+R
↓
2:STEREO (The stereo sound of the audio track 2)

Hints

- The channel returns to the default setting when:
  – you turn off the power.
  – you remove the disc.
- When playing a DVD VIDEO recorded only with one kind of guide vocal, select "1."
- You can select the vocals by selecting "VOCAL SELECT" in the Control Menu display using ↑/↓, and then press ENTER.

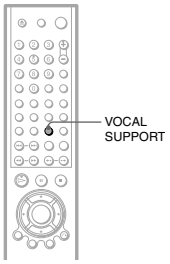
Notes

- When playing a DVD VIDEO, the function works only with the Dolby Digital Karaoke format.
- Depending on the discs, you may not be able to do the operations above.

Receiving Support from Recorded Vocal Track

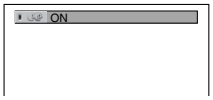
(Vocal Support) DVD-V VCD CD

The recorded vocal will play when you stop singing during a song.



Press VOCAL SUPPORT while playing a disc in karaoke mode.

The following display appears.



To cancel the Vocal Support function

Press VOCAL SUPPORT again.

Hint

You can turn the Vocal Support function on and off by selecting "VOCAL SUPPORT" in the Karaoke Control Menu display using ↑/↓, and then press ENTER.

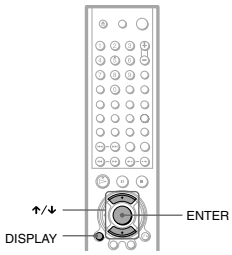
➡continued

Notes

- When playing a DVD VIDEO, you can only use the Vocal Support function with the Dolby Digital karaoke format.
- When you turn the Vocal Support function on, the Vocal function is automatically turned off (page 43).
- When switching the recorded vocal and your vocal while playing a Super VCD, the sound may cut off for a moment.

Turning the Guide Melody On and Off (Guide Melody) DVD-V

You can listen to the guide melody.

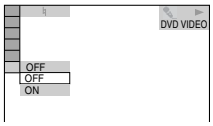


1 Press DISPLAY twice while playing a disc in karaoke mode.

The Control Menu appears.

2 Press ↑/↓ to select (GUIDE MELODY), then press ENTER.

The options for "GUIDE MELODY" appear.



3 Press ↑/↓ to select the setting.

- OFF: To cancel the guide melody.
- ON: To turn on the guide melody.

4 Press ENTER.

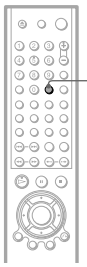
Notes

- This function works only with the Dolby Digital Karaoke format.
- If no guide melody is recorded on the disc, you cannot hear the guide melody even if you turn it on.

Viewing Information About the Disc

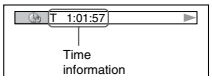
Checking the Playing Time and Remaining Time DVD-V DVD-RW VCD CD DATA CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/CD text or track name (MP3 audio) recorded on the disc.



1 Press TIME/TEXT during playback.

The following display appears.



2 Press TIME/TEXT repeatedly to change the time information.

The available time information depends upon the type of disc you are playing.

◆ When playing a DVD VIDEO or DVD-RW

- T ∗:∗:∗ (hours:minutes:seconds)
  Playing time of the current title
- T–∗:∗:∗
  Remaining time of the current title
- C ∗:∗:∗
  Playing time of the current chapter
- C–∗:∗:∗
  Remaining time of the current chapter

◆ When playing a VIDEO CD or Super VCD (with PBC functions)

- ∗:∗ (minutes:seconds)
  Playing time of the current scene

◆ When playing a VIDEO CD (without PBC functions) or CD

- T ∗:∗ (minutes:seconds)
  Playing time of the current track
- T–∗:∗
  Remaining time of the current track
- D ∗:∗
  Playing time of the current disc
- D–∗:∗
  Remaining time of the current disc

◆ When playing a Super VCD (without PBC functions)

- T ∗:∗ (minutes:seconds)
  Playing time of the current track

◆ When playing a DATA CD (MP3 audio)

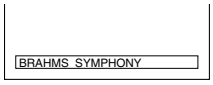
- T ∗:∗ (minutes:seconds)
  Playing time of the current track

➡continued

Checking the play information of the disc

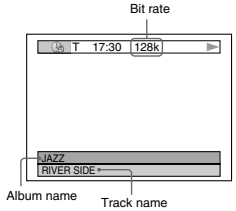
To check DVD/CD text

Press TIME/TEXT repeatedly in Step 2 to display text recorded on the DVD/CD. The DVD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, "NO TEXT" appears.



To check DATA CD (MP3 audio) text

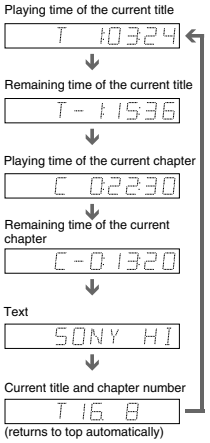
By pressing TIME/TEXT while playing MP3 audio tracks on a DATA CD, the track name and album name appear. You can also display the audio bit rate (the amount of data per second of the current audio track) on your TV screen.



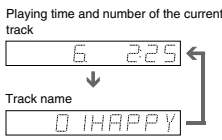
Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you change the time information on your TV screen.

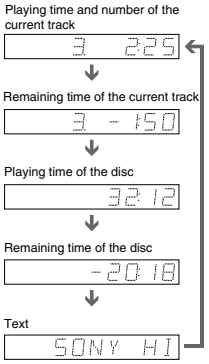
When playing a DVD VIDEO or DVD-RW



When playing a DATA CD (MP3 audio)



When playing a VIDEO CD (without PBC functions) or CD



Hints

- When playing VIDEO CDs without PBC functions, the track number and the index number are displayed after the text.
- When playing VIDEO CDs with PBC functions, the scene number and the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text using the Control Menu (page 12).

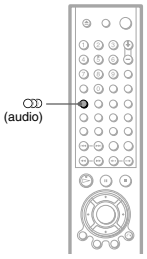
Notes

- Depending on the type of disc being played, the DVD/CD text or track name may not be displayed.
- The player can only display the first level of the DVD/CD text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.
- If you play a disc containing JPEG image files only, the "NO AUDIO DATA" message appears on the front panel display.

Changing the Sound

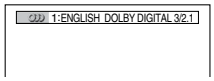
DVD-V DVD-RW VCD CD DATA CD

When playing a DVD VIDEO recorded in multiple audio formats (PCM, Dolby Digital, MPEG audio, or DTS), you can change the audio format. If the DVD VIDEO is recorded with multilingual tracks, you can also change the language.
With CDs, DATA CDs, or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



1 Press (audio) during playback.

The following display appears.



2 Press (audio) repeatedly to select the desired audio signal.

◆ When playing a DVD VIDEO
Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 82 to see which language the code represents.
When the same language is displayed two or more times, the DVD VIDEO is recorded in multiple audio formats.

◆ When playing a DVD-RW
The types of sound tracks recorded on a disc are displayed. The default setting is underlined.
Example:
- 1: MAIN (main sound)
- 1: SUB (sub sound)
- 1: MAIN+SUB (main and sub sound)

◆ When playing a VIDEO CD, CD, or DATA CD (MP3 audio)
The default setting is underlined.
- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

◆ When playing a Super VCD
The default setting is underlined.
- 1: STEREO: The stereo sound of the audio track 1
- 1: 1/L: The sound of the left channel of the audio track 1 (monaural)
- 1: 2/R: The sound of the right channel of the audio track 1 (monaural)
- 2: STEREO: The stereo sound of the audio track 2
- 2: 1/L: The sound of the left channel of the audio track 2 (monaural)
- 2: 2/R: The sound of the right channel of the audio track 2 (monaural)

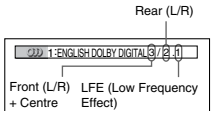
Note

While playing a Super VCD on which the audio track is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

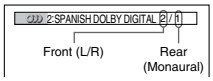
Checking the audio signal format DVD-V

If you press (audio) repeatedly during playback, the format of the current audio signal (Dolby Digital, DTS, PCM, etc.) appears as shown below.

Example:
Dolby Digital 5.1 ch



Example:
Dolby Digital 3 ch



About audio signals
Audio signals recorded in a disc contain the sound elements (channels) shown below. Each channel is output from a separate speaker.
- Front (L)
- Front (R)
- Centre
- Rear (L)
- Rear (R)
- Rear (Monaural): This signal can be either the Dolby Surround Sound processed signals or the Dolby Digital sound's monaural rear audio signals.

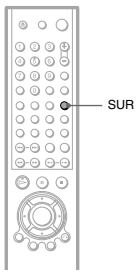
LFE (Low Frequency Effect) signal

Notes

- If "DTS" is set to "OFF" in "AUDIO SETUP" (page 72) the DTS track selection option will not appear on the screen even if the disc contains DTS tracks.
- MPEG audio signals with more than two channels will appear as shown above (3/2.1, 2/1), but only the Front (L) and Front (R) signals will be output from your two front speakers.

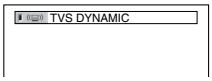
TV Virtual Surround Settings (TVS) DVD-V

When you connect a stereo TV or 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. TVS was developed by Sony to produce surround sound for home use using just a stereo TV.
This only works when playing a multichannel Dolby audio soundtrack. Furthermore, if the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) jack, the surround effect will only be heard when "DOLBY DIGITAL" is set to "D-PCM" in "AUDIO SETUP" (page 73).



1 Press SUR during playback.

The following display appears.



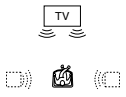
→continued

2 Press SUR repeatedly to select one of the TVS sounds.

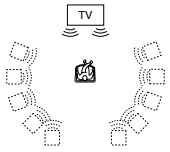
Refer to the following explanations given for each item.
- TVS DYNAMIC
- TVS WIDE
- TVS NIGHT
- TVS STANDARD

To cancel the setting
Select "OFF" in Step 2.

◆TVS DYNAMIC
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below).
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

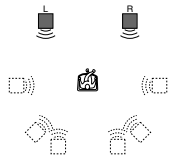


◆TVS WIDE
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



◆TVS NIGHT
Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "TVS WIDE" at low volume.

◆TVS STANDARD
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separate speakers.



L: Front speaker (left)
R: Front speaker (right)
□: Virtual speaker

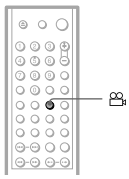
Notes

- When the playing signal does not contain a signal for the rear speakers, the surround effects cannot be heard.
- When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- Not all discs will respond to the "TVS NIGHT" function in the same way.

Changing the Angles

DVD-V

If various angles (multi-angles) for a scene are recorded on the DVD VIDEO, "" appears in the front panel display. This means that you can change the viewing angle.



1 Press (angle) during playback.

The number of the angle appears on the display.

2 Press (angle) repeatedly to select the angle number.

The scene changes to the selected angle.

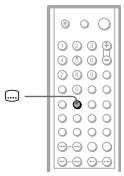
Note

Depending on the DVD VIDEO, you may not be able to change the angles even if multi-angles are recorded on the DVD VIDEO.

Displaying the Subtitles

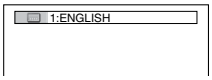
DVD-V DVD-RW

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



1 Press (subtitle) during playback.

The following display appears.



2 Press (subtitle) repeatedly to select the setting.

◆ When playing a DVD VIDEO
Select the language.
Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 82 to see which language the code represents.

◆ When playing a DVD-RW
Select "ON".

To turn off the subtitles
Select "OFF" in Step 2.

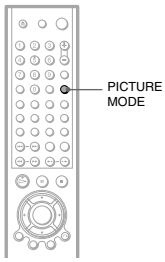
Note

Depending on the DVD VIDEO, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

Adjusting the Playback Picture (CUSTOM PICTURE MODE)

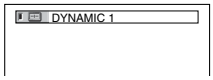
DVD-V DVD-RW VCD DATA CD

You can adjust the video signal of the DVD, VIDEO CD or DATA CD in JPEG format from the player to obtain the picture quality you want. Choose the setting that best suits the programme you are watching.



1 Press PICTURE MODE during playback.

The following display appears.



2 Press PICTURE MODE repeatedly to select the setting you want.

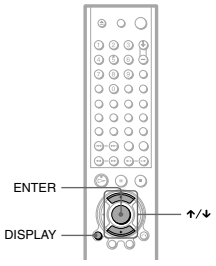
The default setting is underlined.
- STANDARD: displays a standard picture.
- DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the colour intensity.
- DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the colour intensity.
- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: White colours become brighter and black colours become richer, and the colour contrast is increased.

Hint
When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.

Sharpening the Outline of an Image (SHARPNESS)

DVD-V DVD-RW VCD DATA CD

The Sharpness function sharpens the outlines of images on your TV screen.

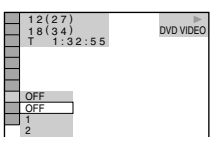


1 Press DISPLAY during playback.

The Control Menu appears.

2 Press ↑/↓ to select (SHARPNESS), then press ENTER.

The options for "SHARPNESS" appear.



3 Press ↑/↓ to select a level.

- 1: enhances the outline.
- 2: enhances the outline more than 1.

4 Press ENTER.

The selected setting takes effect.

To cancel the "SHARPNESS" setting
Select "OFF" in Step 3.

About MP3 Audio Tracks and JPEG Image Files

What is MP3/JPEG?

MP3 is audio compression technology that satisfies the ISO/MPEG regulations. JPEG is image compression technology.

Discs that the player can play

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) and JPEG format. However, the discs must be recorded according to ISO9660 level 1, level 2 or Joliet format for the player to recognize the tracks (or files). You can also play discs recorded in Multi Session.
See the instructions supplied with the CD-R/CD-RW drives and the recording software (not supplied) for details on the recording format.

Note on the multi-session disc
If MP3 audio tracks or JPEG image files are recorded in the first session, the player will also play MP3 audio tracks or JPEG image files in other sessions. If audio tracks and images in Music CD format or Video CD format are recorded in the first session, only the first session will be played back.

Note

The player may not be able to play some DATA CDs created in the Packet Write format. In this case, you cannot view the JPEG images recorded.

MP3 audio tracks or JPEG image files that the player can play

The player can play the MP3 audio tracks or JPEG image files:
- which have the extension ".MP3" (MP3 audio track) or ".JPG" or ".JPEG" (JPEG image file)
- which conform to the DCF* image file format

* "Design rule for Camera File system": Image standards for digital cameras regulated by Japan Electronics and Information Technology Industries Association (JEITA)

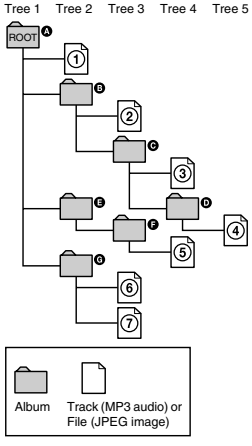
Notes

- The player will play any data with the extension ".MP3", ".JPG" or ".JPEG" even if they are not in MP3 or JPEG format. Playing these data may generate a loud noise which could damage your speaker system.
- The player does not conform to audio in MP3PRO format.

Playback order of MP3 audio tracks or JPEG image files

The playback order of albums, MP3 audio tracks, or JPEG image files recorded on a DATA CD is as follows:

◆Structure of disc contents



When you insert a DATA CD and press ▷, the numbered tracks (or files) are played sequentially, from ① through ⑦. Any sub-albums/tracks (or files) contained within a currently selected album take priority over

the next album in the same tree. (Example: Ⓒ contains Ⓓ so ④ is played before ⑤.)

When you press MENU and the list of album names appears (page 58), the album names are arranged in the following order: Ⓐ → Ⓑ → Ⓒ → Ⓓ → Ⓕ → Ⓖ. Albums that do not contain tracks (or files) (such as album Ⓔ) do not appear in the list.

Hints

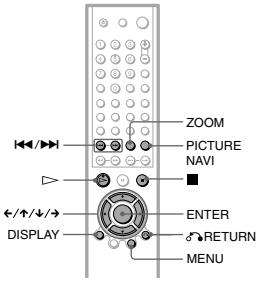
- If you add numbers (01, 02, 03, etc.) to the front of the track/file names when you store the tracks (or files) in a disc, the tracks and files will be played in that order.
- Since a disc with many trees takes longer to start playback, it is recommended that you create albums with no more than two trees.

Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the above illustration.
- The playback order above may not be applicable if there are more than 200 albums and 300 tracks/files in each album.
- The player can recognize up to 200 albums (the player will count just albums, including albums that do not contain MP3 audio tracks and JPEG image files). The player will not play any albums beyond the 200 album.
- The player may take longer time to playback, when progressing to the following album or jump to other album.
- Some type of JPEG files cannot be played.

Playing DATA CDs with MP3 Audio Tracks and JPEG Image Files DATA CD

MP3 audio tracks and JPEG image files recorded on DATA CDs (CD-ROMs/CD-Rs/CD-RWs) can be played on this player.



Hints

- You can view the disc information while playing MP3 audio tracks and JPEG image files (page 47).
- You can select Repeat Play (page 34) or audio format (page 50) while playing an MP3 audio track.

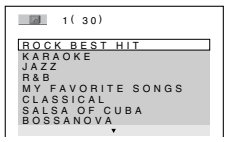
Note

KODAK Picture CD starts playback automatically when the disc is inserted.

➡continued

Selecting an album from a DATA CD

1 Insert a DATA CD into the disc tray.
The list of albums recorded on the DATA CD appears.
When an album is being played, its title is shaded. You can turn the album list on and off by pressing the MENU button.



2 Press ↑/↓ to select the album you want and press ▷.
The player starts playing the selected album.

To stop playback
Press ■.

To play the next or previous MP3 audio track
Press ▶▶I or I◀◀. Note that you can select the next album by continuing to press ▶▶I after the last track on the first album, but that you cannot return to the previous album by pressing I◀◀. To return to the previous album, select the album from the album list.

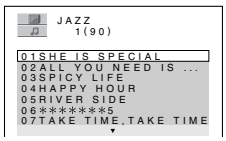
To go to the next or previous JPEG image file
Press → or ←. Note that you can select the next album by continuing to press → after the last image on the first album, but you cannot return to the previous album by pressing ←. To return to the previous album, select the album from the album list.

To turn off the display
Press MENU.

Selecting an MP3 audio track from a DATA CD

1 Insert a DATA CD into the disc tray.
The albums recorded on the DATA CD appear. When an album is being played, its title is shaded.

2 Select an album using ↑/↓ and press ENTER.
The list of tracks contained in the album appears.



3 Select a track using ↑/↓ and press ENTER.
The selected track starts playing. You can turn the track list off by pressing the MENU button. Pressing the MENU button again will display the album list.

To stop playback
Press ■.

To play the next or previous MP3 audio track
Press ▶▶I or I◀◀. Note that you can select the next album by continuing to press ▶▶I after the last track on the first album, but that you cannot return to the previous album by pressing I◀◀. To return to the previous album, select the album from the album list.

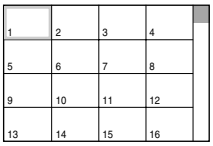
To return to the previous display
Press ↩ RETURN.

To turn off the display
Press MENU.

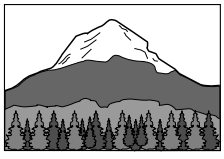
Selecting a JPEG image file from a DATA CD

1 Insert a DATA CD into the disc tray.
The albums recorded on the DATA CD appear. When an album is being played, its title is shaded.

2 Select an album using ↑/↓ and press PICTURE NAVI.
Images of files in the album appear in 16 subscreens.



3 Select the image you want to view by pressing ←/↑/↓/→ and press ENTER.
The selected image appears.
Example



To go to the next or previous JPEG image file
Press ← or →. Note that you can select the next album by continuing to press → after the last image on the first album, but that you cannot return to the previous album by pressing ←. To return to the previous album, select the album from the album list.

To view the images as a slideshow, press ▷.
The slideshow starts from the selected image.

To stop playback
Press ■.

Hints

- A scroll box is displayed at the right side of the screen. To display the additional image files, select the bottom image and press ↓. To return to the previous image, select the top image and press ↑.
- You can also change the slideshow duration (page 61), effect (page 62) and sharpness (page 55) while playing JPEG image files.

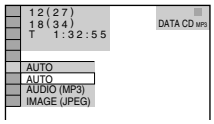
Playing Audio Tracks and Images as a Slideshow with Sound

You can play a slideshow with sound by first placing both JPEG and MP3 files in the same album on a DATA CD. Then, when you play back the DATA CD, select AUTO mode as explained below.

1 Insert a DATA CD into the disc tray.
The albums recorded on the DATA CD appear.

2 Press DISPLAY during stop mode.
The Control Menu appears.

3 Press ↑/↓ to select MODE (MP3, JPEG), then press ENTER.
The options for "MODE (MP3, JPEG)" appear.



4 Press ↑/↓ to select the setting you want and press ENTER.
The default setting is underlined.

◆ **AUTO:**
Playback JPEG image files as a slideshow with sound (MP3 audio track).

◆ **AUDIO (MP3):**
Playback MP3 audio tracks continuously.

◆ **IMAGE (JPEG):**
Playback JPEG image files as a slideshow.

5 Press MENU.
The list of albums recorded on the DATA CD appear.

6 Press ↑/↓ to select the album you want and press ▷.
The player starts playing the selected album.

➡continued

You can turn the album list on and off by pressing the MENU button repeatedly.

Hints

- You can also change the slideshow duration (page 61), effect (page 62) and sharpness (page 55) while viewing JPEG image files.
- If you want to play a slideshow to the same audio track, set the track to Repeat Play (page 34).
- When you select AUTO, the player can recognize up to 300 MP3 tracks and 300 JPEG files in a single album. When you select AUDIO (MP3) or IMAGE (JPEG), the player can recognize up to 600 MP3 tracks and 600 JPEG files in a single album. A maximum of 200 albums can be recognized regardless of the selected mode.

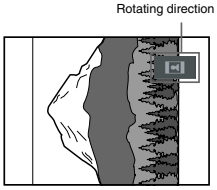
Notes

- You cannot playback JPEG files and MP3 tracks at the same time if they are not contained in the same album.
- When the JPEG image file's playback duration is longer than the MP3 audio track, the image slideshow continues without sound.
- When the MP3 audio track is longer than the JPEG image file's playback duration, the audio track continues with no slideshow.
- If there are no MP3 audio tracks and JPEG image files in the DATA CD, the "No audio data" and "No image data" messages appear on the screen.
- The PICTURE NAVI button does not work when "AUDIO (MP3)" is selected in "MODE (MP3, JPEG)".
- If you play large MP3 track data and JPEG image data at the same time, the sound may skip. It is recommended that you set the MP3 bit rate to 128kbps or lower when creating the file. If the sound still skips, then reduce the size of the JPEG file.

Rotating a JPEG image

When a JPEG image file is displayed on the screen, you can rotate the image by 90 degrees.

Press ↑/↓ while viewing an image. Each time you press ↑, the image rotates counterclockwise by 90 degrees.
Example of when you press ↑ once:

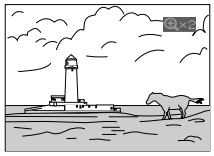


Press CLEAR to return to normal view.

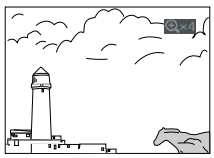
Magnifying a JPEG image

When a JPEG image is displayed on the screen, you can enlarge the image by using the zoom function.

◆Press ZOOM once
Enlarge the image by twice (x2) the actual size.



◆Press ZOOM twice
Enlarge the image by twice (x4) the preceding size (x2).



To return to the normal image size at any time
Press CLEAR.

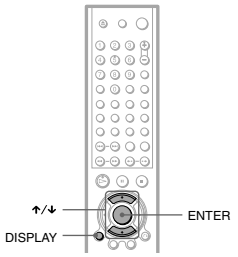
Hint
You can move the enlarged picture using ←/↑/↓/→.

Notes

- If you press → or ← to go to the next or previous image, the rotating JPEG image function is canceled.
- The slideshow stops when you press ↑/↓ or ZOOM buttons.
- Nothing happens when you press ← while playing the first track of the album.

Specifying the slideshow duration DATA CD

When you play JPEG image files using slideshow, you can specify the duration for which the slides are displayed on the screen.

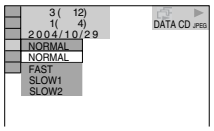


1 Press DISPLAY twice.

The Control Menu for JPEG appears.

2 Press ↑/↓ to select (INTERVAL), then press ENTER.

The options for "INTERVAL" appear.



3 Press ↑/↓ to select the setting you want.

The default setting is underlined.

◆ **NORMAL:**
Sets the duration between 6 to 9 seconds.

◆ **FAST:**
Sets a duration shorter than NORMAL.

◆ **SLOW1:**
Sets a duration longer than NORMAL.

◆ **SLOW2:**
Sets a duration longer than SLOW1.

4 Press ENTER.

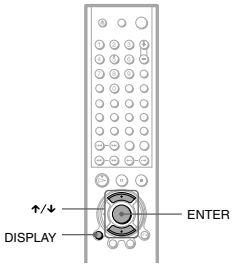
The selected setting takes effect.

Note

Some JPEG files, especially progressive JPEG files or JPEG files of 3,000,000 pixels or more, may take longer to display than others, which may make the duration seem longer than the setting you selected.

Selecting an effect for image files in the slideshow DATA CD

When you play a JPEG image file, you can select the effect to be used when viewing the slide show.

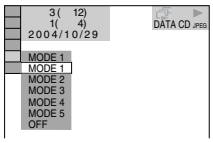


1 Press DISPLAY twice.

The Control Menu for JPEG appears.

2 Press ↑/↓ to select (EFFECT), then press ENTER.

The options for "EFFECT" appear.



3 Press ↑/↓ to select the setting you want.

The default setting is underlined.

◆ **MODE 1:**
The image sweeps in from top to bottom.

◆ **MODE 2:**
The image sweeps in from left to right.

◆ **MODE 3:**
The image stretches out from the centre of the screen.

◆ **MODE 4:**
The images randomly cycle through the effects.

◆ **MODE 5:**
The next image slides over the previous image.

◆ **OFF:**

4 Press ENTER.

The selected setting takes effect.

Using Various Additional Functions

Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL)

You can set two kinds of playback restrictions for the desired disc.

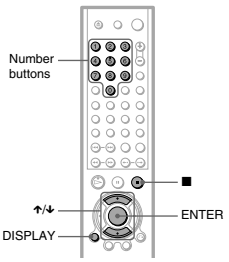
- Custom Parental Control
  You can set playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes.

The same password is used for both Parental Control and Custom Parental Control.

Custom Parental Control

DVD-V VCD CD

You can set the same Custom Parental Control password for up to 40 discs. When you set the 41st-disc, the first disc is cancelled.



1 Insert the disc you want to lock.

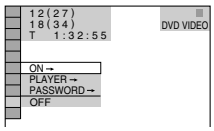
If the disc is playing, press ■ to stop playback.

2 Press DISPLAY while the player is in stop mode.

The Control Menu appears.

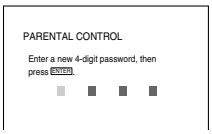
3 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.



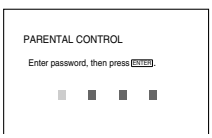
4 Press ↑/↓ to select "ON →," then press ENTER.

◆ **If you have not entered a password**
The display for registering a new password appears.



Enter a 4-digit password using the number buttons, then press ENTER. The display for confirming the password appears.

◆ **When you have already registered a password**
The display for entering the password appears.



5 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.

"Custom parental control is set." appears and then the screen returns to the Control Menu.

→continued

To turn off the Custom Parental Control function

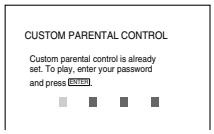
1 Follow Steps 1 through 3 of "Custom Parental Control."

2 Press ↑/↓ to select "OFF →," then press ENTER.

3 Enter your 4-digit password using the number buttons, then press ENTER.

To play a disc for which Custom Parental Control is set

1 Insert the disc for which Custom Parental Control is set.
The "CUSTOM PARENTAL CONTROL" display appears.



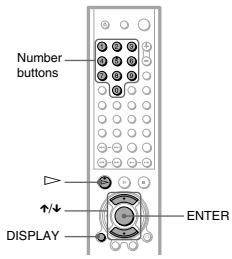
2 Enter your 4-digit password using the number buttons, then press ENTER.
The player is ready for playback.

Hint

If you forget your password, enter the 6-digit number "199703" using the number buttons when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

Parental Control (limited playback) DVD-V

Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.

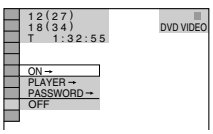


1 Press DISPLAY while the player is in stop mode.

The Control Menu appears.

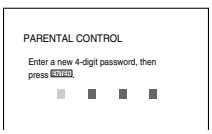
2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.



3 Press ↑/↓ to select "PLAYER →," then press ENTER.

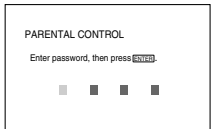
◆ **If you have not entered a password**
The display for registering a new password appears.



Enter a 4-digit password using the number buttons, then press ENTER. The display for confirming the password appears.

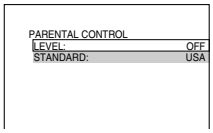
◆ When you have already registered a password

The display for entering the password appears.



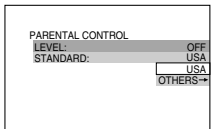
4 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.

The display for setting the playback limitation level appears.



5 Press ↑/↓ to select "STANDARD," then press ENTER.

The selection items for "STANDARD" are displayed.



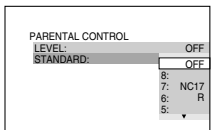
6 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.

The area is selected.

When you select "OTHERS →," select and enter a standard code in the table on page 66 using the number buttons.

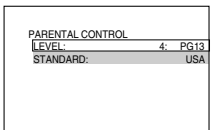
7 Press ↑/↓ to select "LEVEL," then press ENTER.

The selection items for "LEVEL" are displayed.



8 Select the level you want using ↑/↓, then press ENTER.

Parental Control setting is complete.



The lower the value, the stricter the limitation.

To turn off the Parental Control function

Set "LEVEL" to "OFF" in Step 8.

To play a disc for which Parental Control is set

1 Insert the disc and press ▷.
The display for entering your password appears.

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

Hint

If you forget your password, remove the disc and repeat Steps 1 to 3 of "Parental Control (limited playback)." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password, replace the disc in the player and press ▷. When the display for entering your password appears, enter your new password.

➡continued

Notes

- When you play discs which do not have the Parental Control function, playback cannot be limited on this player.
- Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is cancelled, the level returns to the previous level.

Area Code

Standard	Code number	Standard	Code number
Argentina	2044	Korea	2304
Australia	2047	Malaysia	2363
Austria	2046	Mexico	2362
Belgium	2057	Netherlands	2376
Brazil	2070	New Zealand	2390
Canada	2079	Norway	2379
Chile	2090	Pakistan	2427
China	2092	Philippines	2424
Denmark	2115	Portugal	2436
Finland	2165	Russia	2489
France	2174	Singapore	2501
Germany	2109	Spain	2149
India	2248	Sweden	2499
Indonesia	2238	Switzerland	2086
Italy	2254	Thailand	2528
Japan	2276	United Kingdom	2184

Changing the password

1 Press DISPLAY while the player is in stop mode.

The Control Menu appears.

2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.

3 Press ↑/↓ to select "PASSWORD →," then press ENTER.

The display for entering the password appears.

4 Enter your 4-digit password using the number buttons, then press ENTER.

5 Enter a new 4-digit password using the number buttons, then press ENTER.

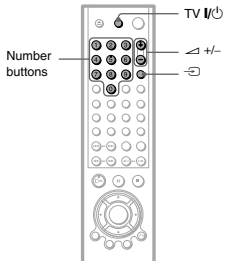
6 To confirm your password, re-enter it using the number buttons, then press ENTER.

If you make a mistake entering your password

Press ← before you press ENTER and input the correct number.

Controlling Your TV with the Supplied Remote

You can control the sound level, input source, and power switch of your Sony TV with the supplied remote.



You can control your TV using the buttons below.

By pressing	You can
TV I/⏻	Turn the TV on or off
(volume) +/–	Adjust the volume of the TV
(TV/video)	Switch the TV's input source between the TV and other input sources.

Note

Depending on the unit being connected, you may not be able to control your TV using all or some of the buttons on the supplied remote.

Controlling other TVs with the remote

You can control the sound level, input source, and power switch of non-Sony TVs as well. If your TV is listed in the table below, set the appropriate manufacturer's code.

1 While holding down TV I/⏻, press the number buttons to select your TV's manufacturer's code (see the table below).

2 Release TV I/⏻.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony	01 (default)
Aiwa	01 (default)
Grundig	11
Hitachi	24
JVC	33
LG	06
Loewe	06
Panasonic	17, 49
Philips	06, 08
Samsung	06, 71
Sanyo	25
Sharp	29
Thomson	43
Toshiba	38

Notes

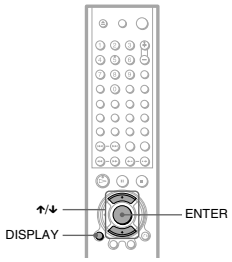
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number you have set may be reset to the default setting. Set the appropriate code number again.
- Depending on the unit being connected, you may not be able to control your TV using all or some of the buttons on the supplied remote.

Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 69 to 74.

Note

Playback settings stored in the disc take priority over the Setup Display settings and not all the functions described may work.

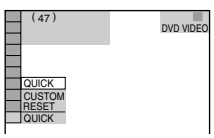


1 Press DISPLAY when the player is in stop mode.

The Control Menu appears.

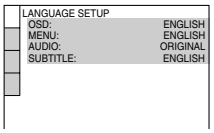
2 Press ↑/↓ to select (SETUP), then press ENTER.

The options for "SETUP" appear.



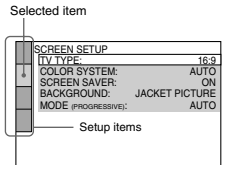
3 Press ↑/↓ to select "CUSTOM," then press ENTER.

The Setup Display appears.



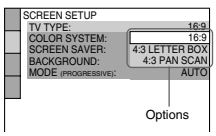
4 Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.

The Setup item is selected.
Example: "SCREEN SETUP"



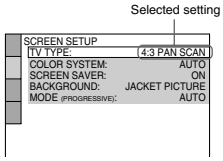
5 Select an item using ↑/↓, then press ENTER.

The options for the selected item appear.
Example: "TV TYPE"



6 Select a setting using ↑/↓, then press ENTER.

The setting is selected and setup is complete.
Example: "4:3 PAN SCAN"



To enter the Quick Setup mode

Select "QUICK" in Step 3. Follow from Step 5 of the Quick Setup explanation to make basic adjustments (page 23).

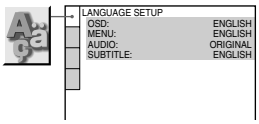
To reset all of the "SETUP" settings

1. Select "RESET" in Step 3 and press ENTER.
2. Select "YES" using ↑/↓.
   You can also quit the process and return to the Control Menu by selecting "NO" here.
3. Press ENTER.
   All the settings explained on pages 69 to 74 return to the default settings. Do not press I/⏻ while resetting the player as it takes a few seconds to complete.

Setting the Display or Sound Track Language (LANGUAGE SETUP)

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 68).



◆ OSD (On-Screen Display)
Switches the display language on the screen.

◆ MENU (DVD VIDEO only)
You can select the desired language for the disc's menu.

◆ AUDIO (DVD VIDEO only)
Switches the language of the sound track. When you select "ORIGINAL," the language given priority in the disc is selected.

◆ SUBTITLE (DVD VIDEO only)
Switches the language of the subtitle recorded on the DVD VIDEO.
When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Hint
If you select "OTHERS →" in "MENU," "SUBTITLE," and "AUDIO," select and enter a language code from "Language Code List" on page 82 using the number buttons.

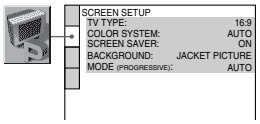
Note
When you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on the DVD VIDEO, one of the recorded languages will be automatically selected.

Settings and Adjustments

Settings for the Display (SCREEN SETUP)

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 68).
The default settings are underlined.



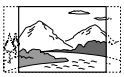
◆ TV TYPE
Selects the aspect ratio of the connected TV (4:3 standard or wide).

16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.
4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.

16:9

4:3 LETTER BOX

4:3 PAN SCAN



Note
Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

◆ COLOR SYSTEM (VIDEO CD only)
Select the colour system when you play a VIDEO CD.

AUTO	Outputs the video signal in the system of the VIDEO CD, either PAL or NTSC. If your TV is the DUAL system, select AUTO.
PAL	Changes the video signal of an NTSC VIDEO CD and outputs it in the PAL system.
NTSC	Changes the video signal of a PAL VIDEO CD and outputs it in the NTSC system.

Notes
- You cannot change the colour system for DVDs.
- You can change the colour system of this player according to the connected TV. See page 17.

◆ SCREEN SAVER
The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

◆ BACKGROUND
Selects the background colour or picture on the TV screen in stop mode or while playing a CD or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background colour is blue.
BLACK	The background colour is black.

When NORMAL/PROGRESSIVE switch is set to PROGRESSIVE

You can fine-tune the Progressive (525p/625p) video signal output when you set NORMAL/PROGRESSIVE switch to PROGRESSIVE (the PROGRESSIVE indicator lights up) and connect the player using the COMPONENT VIDEO OUT jacks to a TV that is able to accept the video signal in progressive format.

◆ MODE (PROGRESSIVE)
DVD software can be divided into two types: film based software and video based software. Video based software is derived from TV, such as dramas and sit-coms, and displays images at 30 frames/60 fields (25 frames/50 fields) per second. Film based software is derived from film and displays images at 24 frames per second. Some DVD software contains both Video and Film.
In order for these images to appear natural on your screen when output in progressive mode (60 frames or 50 frames per second), the progressive video signal needs to be converted to match the type of DVD software that you are watching.

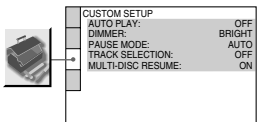
AUTO	This will automatically detect if you are playing Film based or Video based software and convert the signal to the appropriate conversion mode. Normally select this position.
VIDEO	This will set the conversion mode for Video based software, regardless of the type of software that you are playing.

Note
Using the LINE OUT (VIDEO) jack or the S VIDEO OUT jack will cause the picture to become unclear or go blank when you set NORMAL/PROGRESSIVE switch to PROGRESSIVE. In this case, set NORMAL/PROGRESSIVE switch to NORMAL so that the PROGRESSIVE indicator turns off.

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select "CUSTOM SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 68).
The default settings are underlined.



◆ AUTO PLAY
Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on.

◆ DIMMER
Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.

◆ PAUSE MODE (DVD VIDEO/DVD-RW only)
Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

Settings and Adjustments

◆ TRACK SELECTION (DVD VIDEO only)
Gives the sound track which contains the highest number of channels priority when you play a DVD VIDEO on which multiple audio formats (PCM, MPEG audio, DTS, or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

Notes
- When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 69).
- If you set "DTS" to "OFF" (page 74), the DTS sound track is not played even if you set "TRACK SELECTION" to "AUTO."
- If PCM, DTS, MPEG audio, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS, Dolby Digital, and MPEG audio sound tracks in this order.

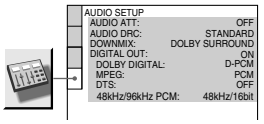
◆ MULTI-DISC RESUME (DVD VIDEO/VIDEO CD only)
Switches the Multi-disc Resume setting on or off. Resume playback point can be stored in memory for up to 6 different DVD VIDEO/VIDEO CD discs (page 30).

ON	Stores the resume settings in memory for up to six discs.
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

Settings for the Sound (AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 68).
The default settings are underlined.



◆ AUDIO ATT (attenuation)
If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) jacks.

OFF	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD VIDEO/DVD-RW only)
Makes the sound clear when the volume is turned down when playing a DVD that conforms to "AUDIO DRC." This affects the output from the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 73).

STANDARD	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

◆ DOWNMIX (DVD VIDEO/DVD-RW only)
Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see "Checking the audio signal format" (page 51). This function affects the output of the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack when "DOLBY DIGITAL" is set to "D-PCM" (page 73).

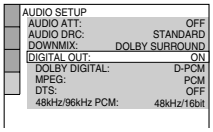
DOLBY SURROUND	Normally, select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
NORMAL	Multi-channel audio signals are downmixed to two channels for use with your stereo.

◆ DIGITAL OUT
Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

ON	Normally select this position. When you select "ON," see "Setting the digital output signal" for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.
For connection details, see page 18.
Select "DOLBY DIGITAL," "MPEG," "DTS," and "48kHz/96kHz PCM" after setting "DIGITAL OUT" to "ON."



If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, damaging your ears or speakers.

◆ DOLBY DIGITAL (DVD VIDEO/DVD-RW only)
Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component without a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP" (page 73).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

➞continued

◆ MPEG (DVD VIDEO/DVD-RW only)
Selects the type of MPEG audio signal.

PCM	Select this when the player is connected to an audio component without a built-in MPEG decoder. If you play multichannel MPEG audio soundtracks, only the Front (L) and Front (R) signals will be output from your two front speakers.
MPEG	Select this when the player is connected to an audio component with a built-in MPEG decoder.

◆ DTS
Selects whether or not to output DTS signals.

OFF	Select this when the player is connected to an audio component without a built-in DTS decoder.
ON	Select this when the player is connected to an audio component with a built-in DTS decoder.

◆ 48kHz/96kHz PCM (DVD VIDEO only)
Selects the sampling frequency of the audio signal.

48kHz/16bit	The audio signals of DVD VIDEOs are always converted to 48kHz/16bit.
96kHz/24bit	All types of signals including 96kHz/24bit are output in their original format. However, if the signal is encrypted for copyright protection purposes, the signal is only output as 48kHz/16bit.

Note

The analog audio signals from LINE OUT L/R (AUDIO) jacks are not affected by this setting and keep their original sampling frequency level.

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power is not turned on.
➞ Check that the power cord (mains lead) is connected securely.

Picture

There is no picture/picture noise appears.
➞ Re-connect the connecting cord securely.
➞ The connecting cords are damaged.
➞ Check the connection to your TV (page 16) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
➞ The disc is dirty or flawed.
➞ If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programmes could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S VIDEO input (page 16).
➞ If the colour system of your player does not match with that of your TV, change the colour system of the player. For details, see page 17. (You cannot change the colour system of the DVD disc itself.)
➞ You set the NORMAL/PROGRESSIVE switch to PROGRESSIVE on the rear panel (the PROGRESSIVE indicator lights up) even though your TV cannot accept the progressive signal. In this case, set the NORMAL/PROGRESSIVE switch to NORMAL on the rear panel so that the PROGRESSIVE indicator turns off.
➞ You set the NORMAL/PROGRESSIVE switch to PROGRESSIVE on the rear panel (the PROGRESSIVE indicator lights up) but did not connect your TV to the player's COMPONENT VIDEO OUT jacks using a COMPONENT VIDEO cord. Set to the PROGRESSIVE only when you connect your TV to the player's COMPONENT VIDEO OUT jacks using a component video cord (page 16).
➞ Even if your TV is compatible with progressive format (525p/625p) signals, the image may be affected when you set the player to progressive format. In this case, set the NORMAL/PROGRESSIVE switch to NORMAL so that the PROGRESSIVE indicator turns off and the player is set to normal (interlace) format.

Even though you set the aspect ratio in "TV TYPE" of "SCREEN SETUP," the picture does not fill the screen.
➞ The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.
➞ Re-connect the connecting cord securely.
➞ The connecting cord is damaged.
➞ The player is connected to the wrong input jack on the amplifier (receiver) (page 20, 21, 22).
➞ The amplifier (receiver) input is not correctly set.
➞ The player is in pause mode or in Slow-motion Play mode.
➞ The player is in fast forward or fast reverse mode.
➞ If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 73).
➞ While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."
➞ When playing multichannel MPEG audio soundtracks, only the Front (L) and Front (R) signals will be output from two front speakers.

Sound distortion occurs.
➞ Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 72).

➞continued

The sound volume is low.
➞ The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" to "TV MODE" (page 72).
➞ Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 72).

Operation

The remote does not function.
➞ There are obstacles between the remote and the player.
➞ The distance between the remote and the player is too far.
➞ The remote is not pointed at the remote sensor on the player.
➞ The batteries in the remote are weak.

The disc does not play.
➞ The disc is turned over.
Insert the disc with the playback side facing down on the disc tray.
➞ The disc is skewed.
➞ The player cannot play certain discs (page 7).
➞ The region code on the DVD does not match the player.
➞ Moisture has condensed inside the player (page 3).
➞ The player cannot play a recorded disc that is not correctly finalized (page 7).

The MP3 audio track cannot be played (page 57).
➞ The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/ Level 2 or Joliet.
➞ The MP3 audio track does not have the extension ".MP3."
➞ The data is not formatted in MP3 even though it has the extension ".MP3."
➞ The data is not MPEG1 Audio Layer 3 data.
➞ The player cannot play audio tracks in MP3PRO format.
➞ The MODE (MP3, JPEG) setting has been set to IMAGE (JPEG) (page 59).

The JPEG image file cannot be played (page 56)
➞ The DATA CD is not recorded in a JPEG format that conforms to ISO9660 Level 1/ Level 2, or Joliet.
➞ It has an extension other than ".JPEG" or ".JPG".
➞ It is larger than 3072 (width) × 2048 (weight) in normal mode, or more than 3,300,000 pixels in Progressive JPEG.
➞ It does not fit the screen (those images are reduced).
➞ The MODE (MP3, JPEG) setting has been set to "MP3 (AUDIO)" (page 59).

"Copyright lock" appears and the screen turns blue when playing a DVD-RW disc.
➞ Images taken from digital broadcasts, etc., may contain copy protection signals, such as complete copy protection signals, single copy signals, and restriction-free signals. When images that contain copy protection signals are played, a blue screen may appear instead of the images. It may take a while when looking for playable images.

The MP3 audio tracks and JPEG image file starts playing simultaneously (page 59).
➞ AUTO has been selected in MODE (MP3, JPEG).

The title of albums, MP3 tracks, or JPEG files are not displayed correctly.
➞ The player can only display numbers and letters of. Other characters are displayed as "*."

The disc does not start playing from the beginning.
➞ Programme Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 31).
➞ Resume play has taken effect (page 28).

The player starts playing the disc automatically.
➞ The disc features an auto playback function.
➞ "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 71).

Playback stops automatically.
➞ While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

You cannot perform some functions such as Stop, Search, Slow-motion Play, Repeat Play, Shuffle Play, or Programme Play.

➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

The language for the sound track cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 29).
➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 29).
➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the subtitles.

The angles cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 29).
➡ Multi-angles are not recorded on the DVD being played.
➡ The angle can only be changed when the "" indicator lights up on the front panel display (page 9).
➡ The DVD prohibits changing of the angles.

The player does not operate properly.

➡ When static electricity, etc., causes the player to operate abnormally, unplug the player.

5 numbers or letters are displayed on the screen and on the front panel display.

➡ The self-diagnosis function was activated. (See the table on page 78.)

The disc tray does not open and "LOCKED" appears on the front panel display.

➡ Child Lock is set (page 27).

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.

➡ Contact your Sony dealer or local authorized Sony service facility.

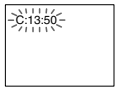
"Data error" appears on the TV screen when playing a DATA CD.

➡ The MP3 audio track/JPEG image file you want to play is broken.
➡ The data is not MPEG1 Audio Layer 3 data.
➡ The JPEG image file format does not conform to DCF (page 56).
➡ The JPEG image file has the extension ".JPG" or ".JPEG" but not in JPEG format.

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty or recorded in a format that this player cannot play (page 7). ➡ Clean the disc with a soft cloth or check its format (page 7).
C 31	The disc is not inserted correctly. ➡ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Album (page 56, 58)
A unit in which to store JPEG image files or MP3 audio tracks on a DATA CD. ("Album" is an exclusive definition for this player.)

Chapter (page 9)
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 22, 73)
Digital audio compression technology developed by Dolby Laboratories. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same discrete channels of high quality digital audio found in "Dolby Digital" theatre surround sound systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 21)
Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, centre and rear signals. The rear channel is monaural.

DTS (page 22, 74)
Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same discrete channels of high quality digital audio. Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD VIDEO (page 6)
A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17GB.
The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.
Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

DVD-RW (page 6)
A DVD-RW is a recordable and rewritable disc that is the same size as a DVD VIDEO. The DVD-RW has two different modes: VR mode and Video mode. DVD-RWs created in Video mode have the same format as a DVD VIDEO, while discs created in VR (Video Recording) mode allow the contents to be programmed or edited.

DVD+RW (page 6)
A DVD+RW (plus RW) is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

File (page 56, 59)
A JPEG image recorded on a DATA CD ("File" is an exclusive definition for this player.) A single file consist of a single image.

Film based software, Video based software (page 71)
DVDs can be classified as Film based or Video based software. Film based DVDs contain the same images (24 frames per second) that are shown at movie theaters. Video based DVDs, such as television dramas or sit-coms, displays images at 30 frames/60 fields (25 frames/50 fields) per second.

Video Index (VIDEO CD) (page 9)
A number that divides a track into sections to easily locate the point you want on a VIDEO CD. Depending on the disc, no index may be recorded.

MPEG audio (page 22, 74)
International standard coding system used to compress audio digital signals authorized by ISO/IEC. MPEG 1 conforms to up to 2-channel stereo. MPEG 2, used on DVDs, conforms to up to 7.1-channel surround.

Normal (Interlace) format (page 71)
Normal (Interlace) format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

Progressive format (page 71)
Compared to the Normal (Interlace) format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Normal (Interlace) format can show 25 or 30 frames (50-60 fields) in one second, the Progressive format can show 50-60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper. This player is compatible with the 525 or 625 progressive format.

➡continued

Progressive JPEG (page 61)
Progressive JPEGs are used mostly on the internet. They are different from other JPEGs in that they "fade in" gradually instead of being drawn from top to bottom when displayed on a browser. This lets you view the image while it is being downloaded.

Scene (page 9)
On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

Title (page 9)
The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 9)
Sections of a picture or a music feature on a VIDEO CD, CD or DATA CD. (the length of a song). ("Track" in DATA CD is an exclusive definition for this player).

Specifications

System

Laser: Semiconductor laser
Signal format system: NTSC/PAL (See page 17 to switch)

Audio characteristics

Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)/DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB (LINE OUT L/R (AUDIO) jacks only)
Harmonic distortion: 0.003 %
Dynamic range: DVD VIDEO: 103 dB/CD: 99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

Outputs and Input

(**Jack name:** Jack type/Output level/Load impedance)
LINE OUT (AUDIO): Phono jack/2 Vrms/10 kilohms
DIGITAL OUT (OPTICAL): Optical output jack/–18 dBm (wave length: 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT(Y, P_B/C_B, P_R/C_R): Phono jack/Y: 1.0 Vp-p, P_B/C_B, P_R/C_R: 0.7 Vp-p/75 ohms
LINE OUT (VIDEO): Phono jack/1.0 Vp-p/75 ohms
S VIDEO OUT: 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.3 Vp-p (PAL), 0.286 Vp-p (NTSC)/75 ohms
MIC 1/2: Phone jacks

General

Power requirements:
110 – 240 V AC, 50/60 Hz
Power consumption: 12 W
Dimensions (approx.):
DVP-K870P: 430 × 55.5 × 245.7 mm
DVP-K880P: 430 × 55.5 × 243.7 mm (width/height/depth) incl. projecting parts
Mass (approx.):
2.1 kg
Operating temperature: 5 °C to 35 °C
Operating humidity: 25 % to 80 %

Supplied accessories

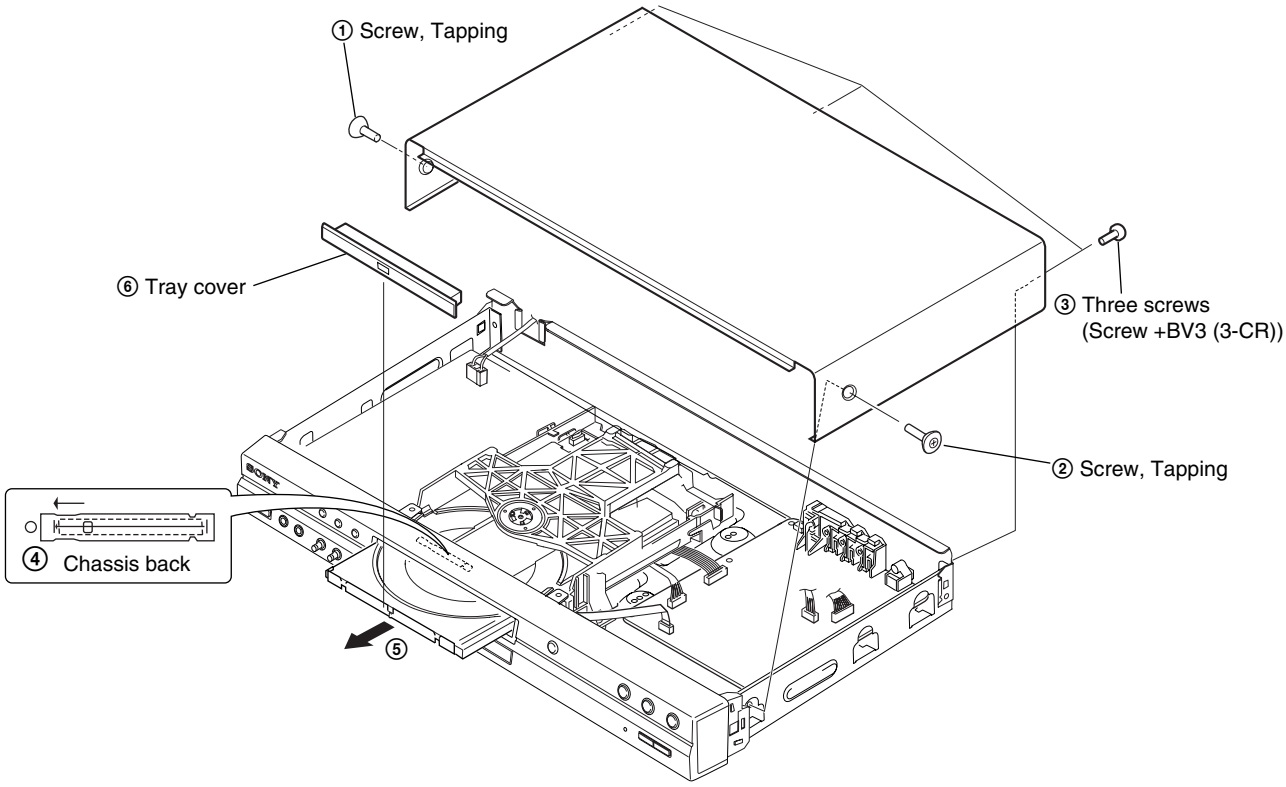
See page 15.

Specifications and design are subject to change without notice.

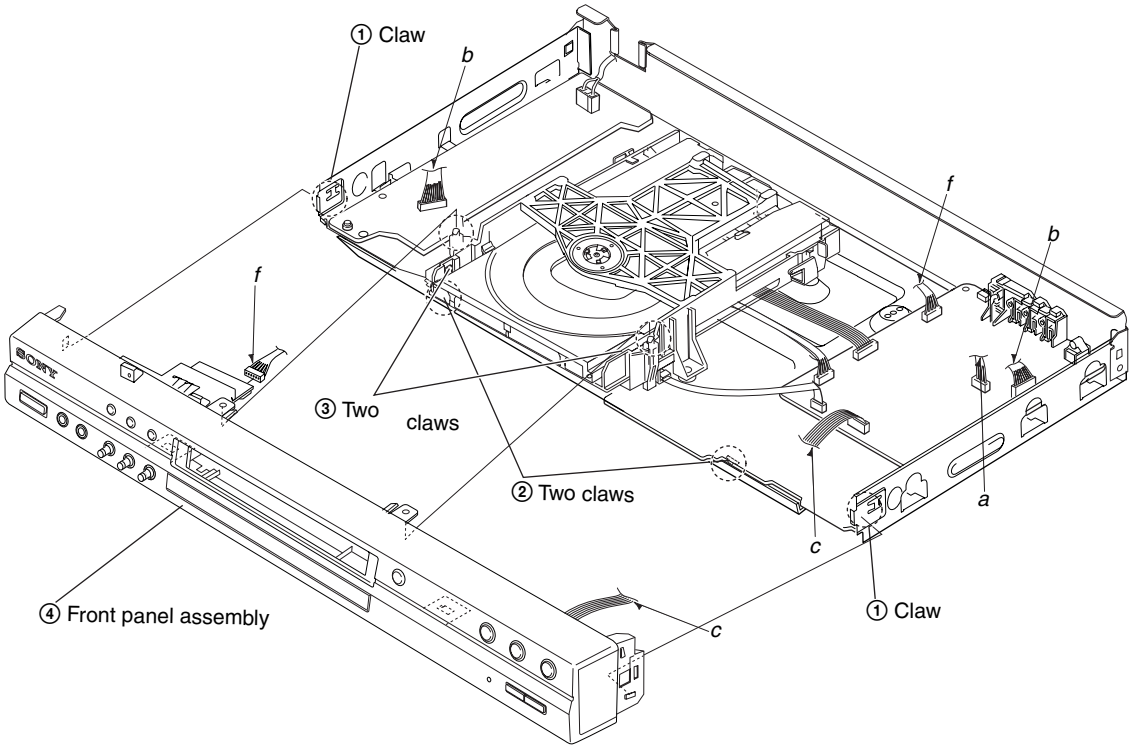
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

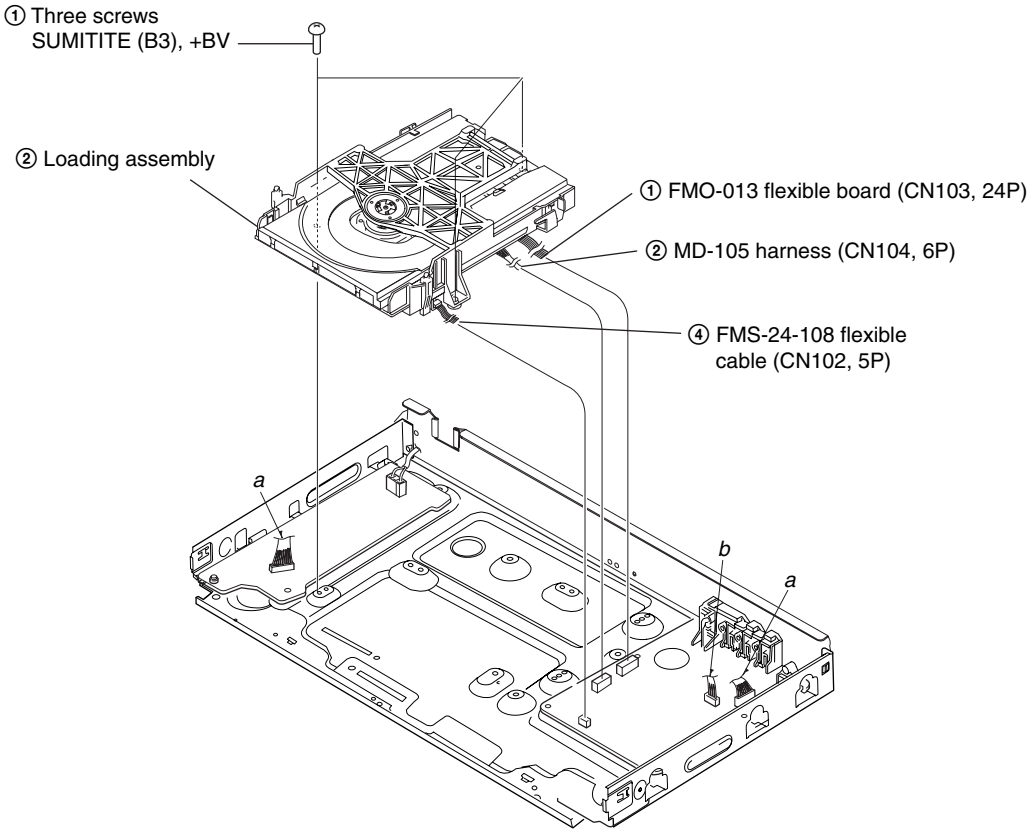
2-1. UPPER CASE



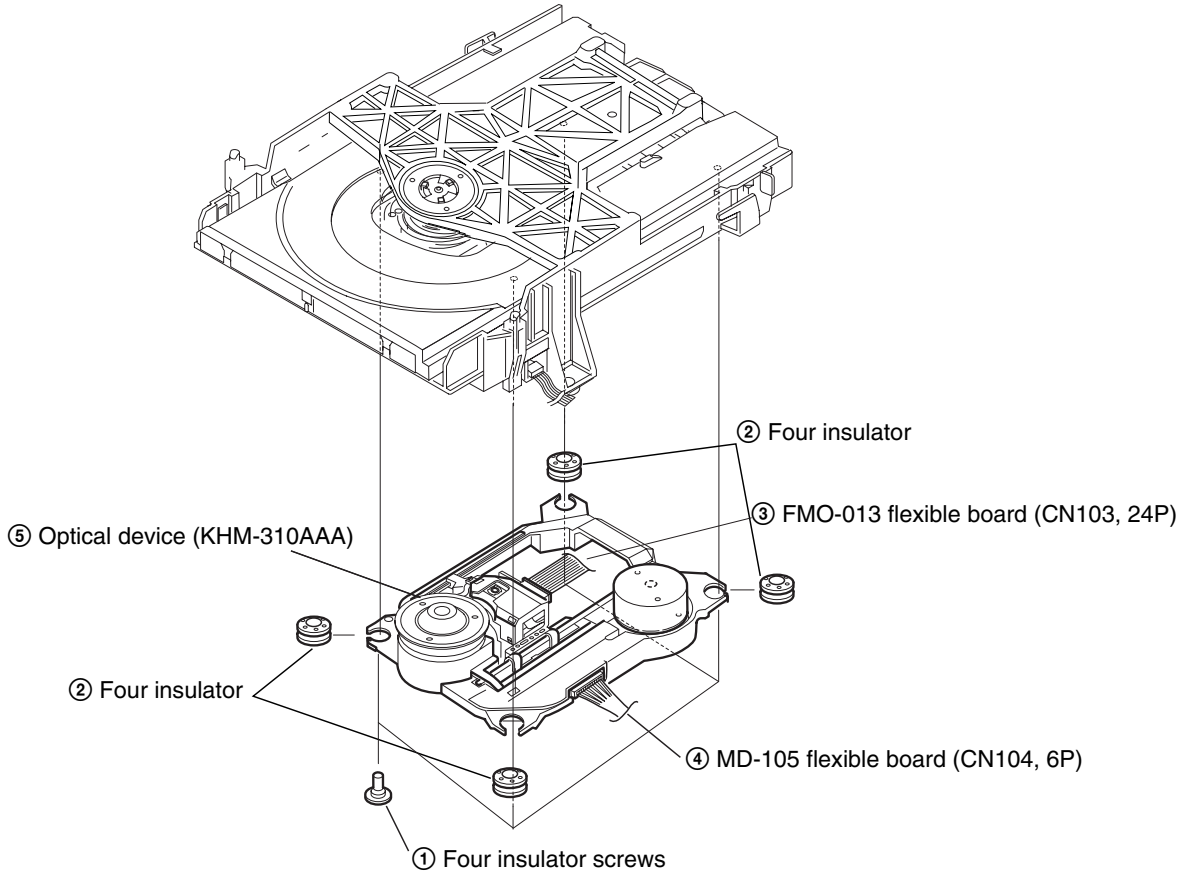
2-2. FRONT PANEL ASSEMBLY



2-3. LOADING ASSEMBLY



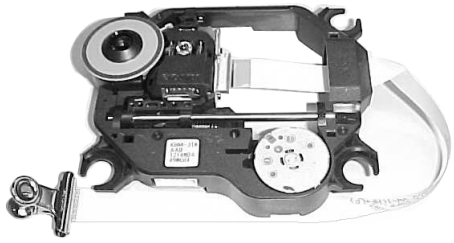
2-4. OPTICAL DEVICE (KHM-310AAA)


② Four insulator
③ FMO-013 flexible board (CN103, 24P)
⑤ Optical device (KHM-310AAA)
② Four insulator
④ MD-105 flexible board (CN104, 6P)
① Four insulator screws

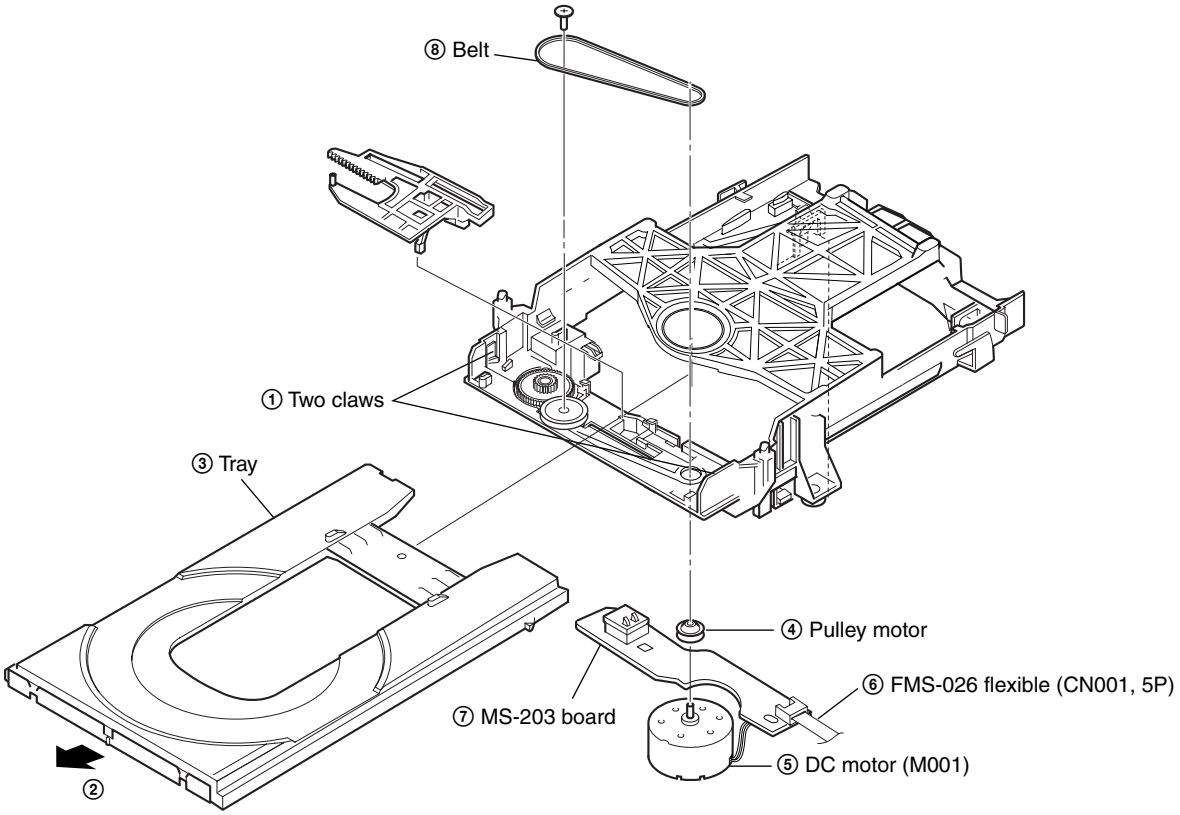
Caution Point on the Laser Diode:

Laser Diode in the optical Device is very sensitive to Surge Current or ElectroStatic Discharge (ESD):

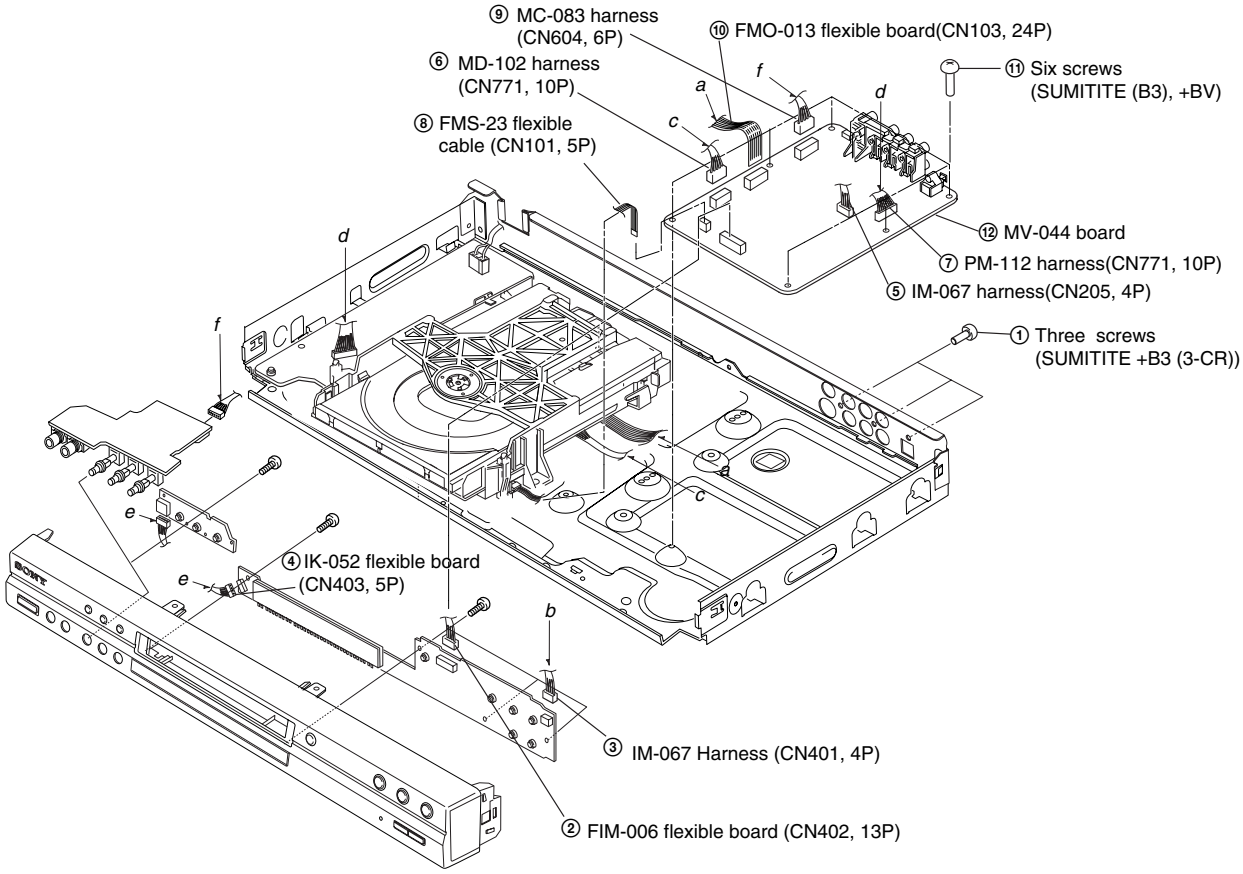
After take-out FMO-24 Flexible cable from CN103 of MV-044 board immediately ground FMO-24 Flexible cable pattern using short clip. Metal paper clip can be used as short clip.



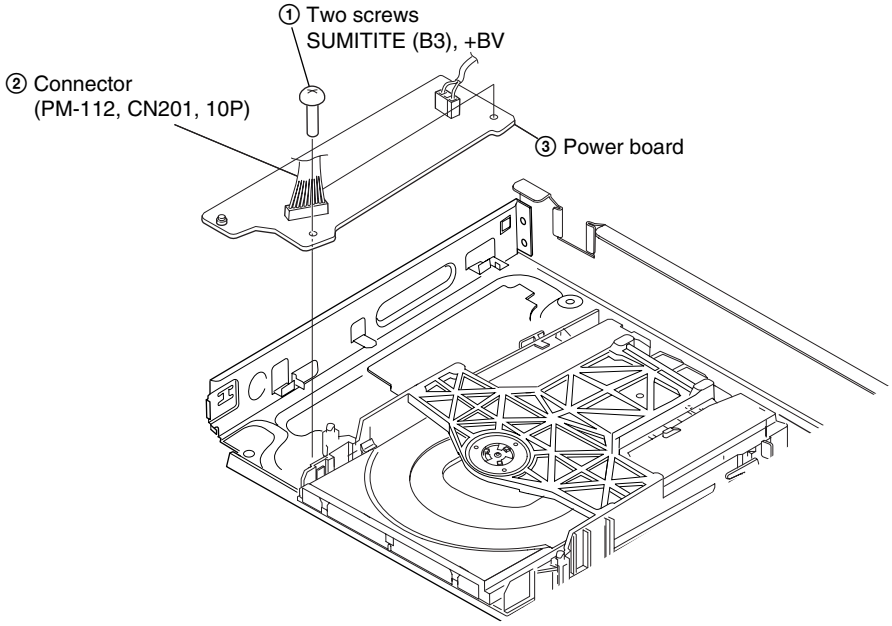
2-5. DC MOTOR and MS-203 BOARD



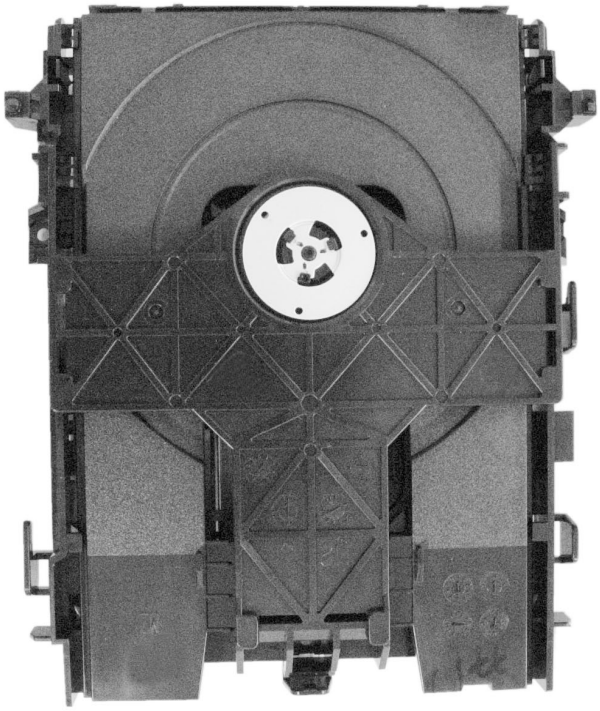
2-6. MV-044 BOARD


⑨ MC-083 harness (CN604, 6P)
⑩ FMO-013 flexible board(CN103, 24P)
⑥ MD-102 harness (CN771, 10P)
⑪ Six screws (SUMITITE (B3), +BV)
⑧ FMS-23 flexible cable (CN101, 5P)
⑫ MV-044 board
⑦ PM-112 harness(CN771, 10P)
⑤ IM-067 harness(CN205, 4P)
① Three screws (SUMITITE +B3 (3-CR))
④ IK-052 flexible board (CN403, 5P)
③ IM-067 Harness (CN401, 4P)
② FIM-006 flexible board (CN402, 13P)

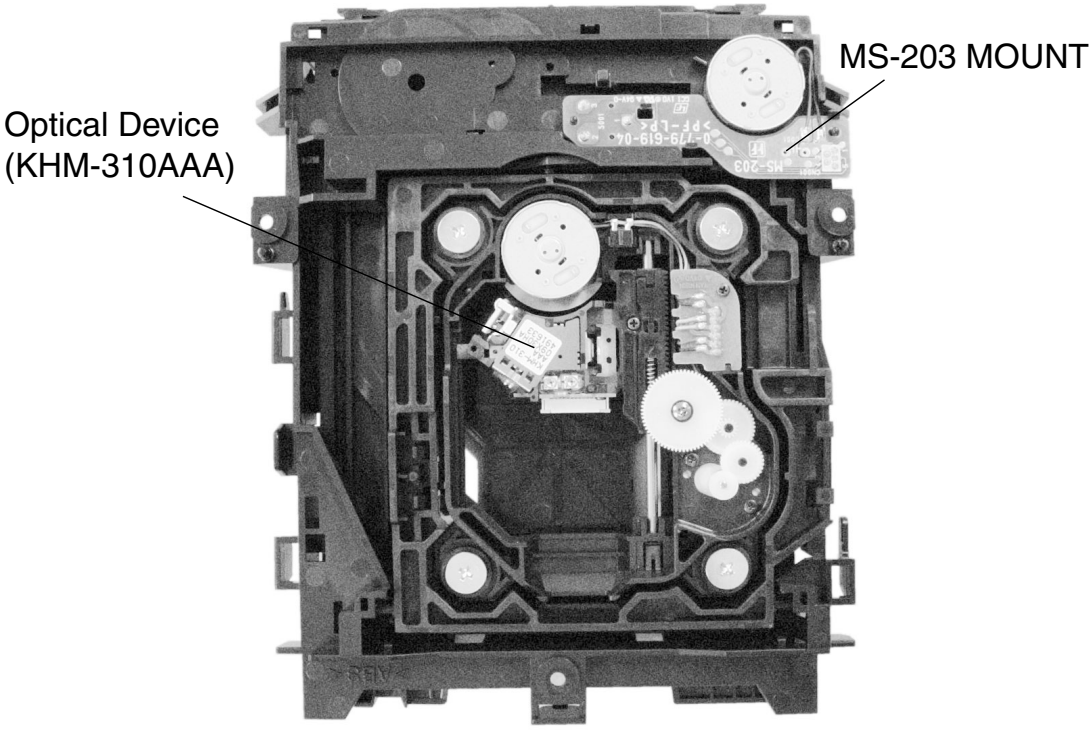
2-7. SWITCHING REGULATOR



2-8. INTERNAL VIEWS

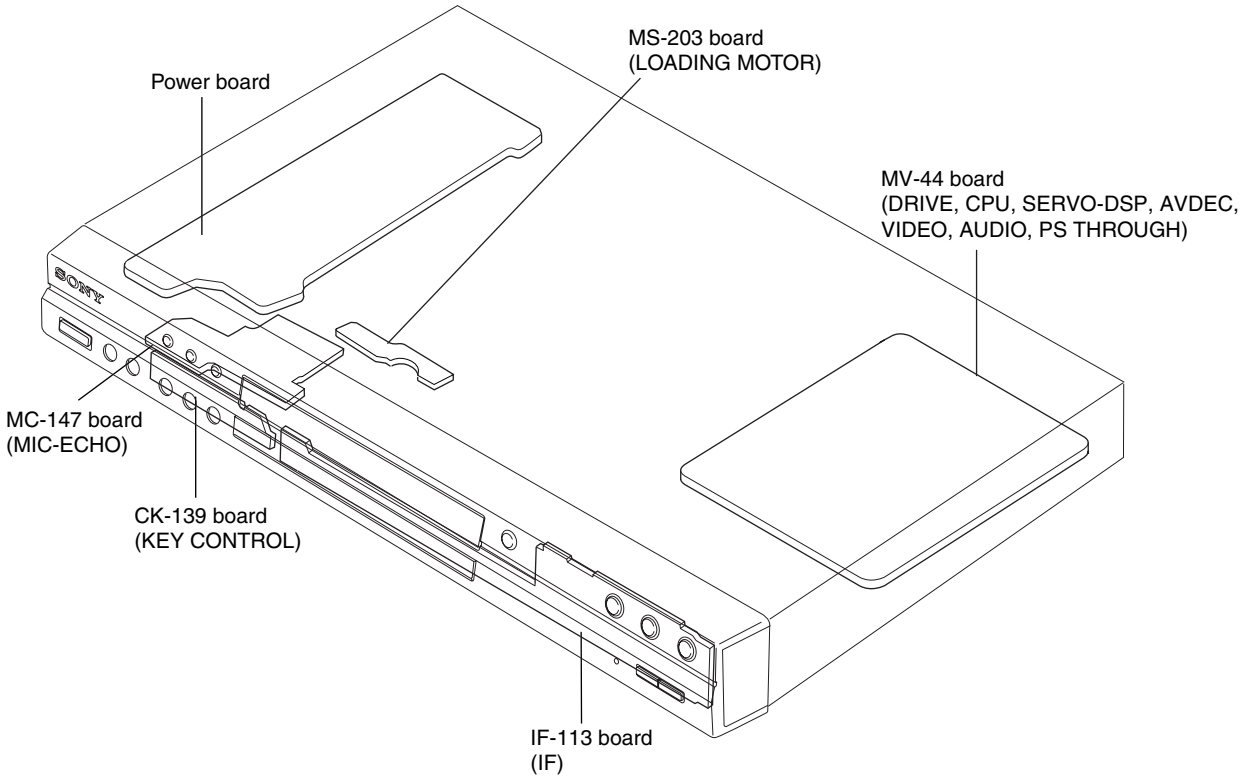


TOP VIEW



BOTTOM VIEW

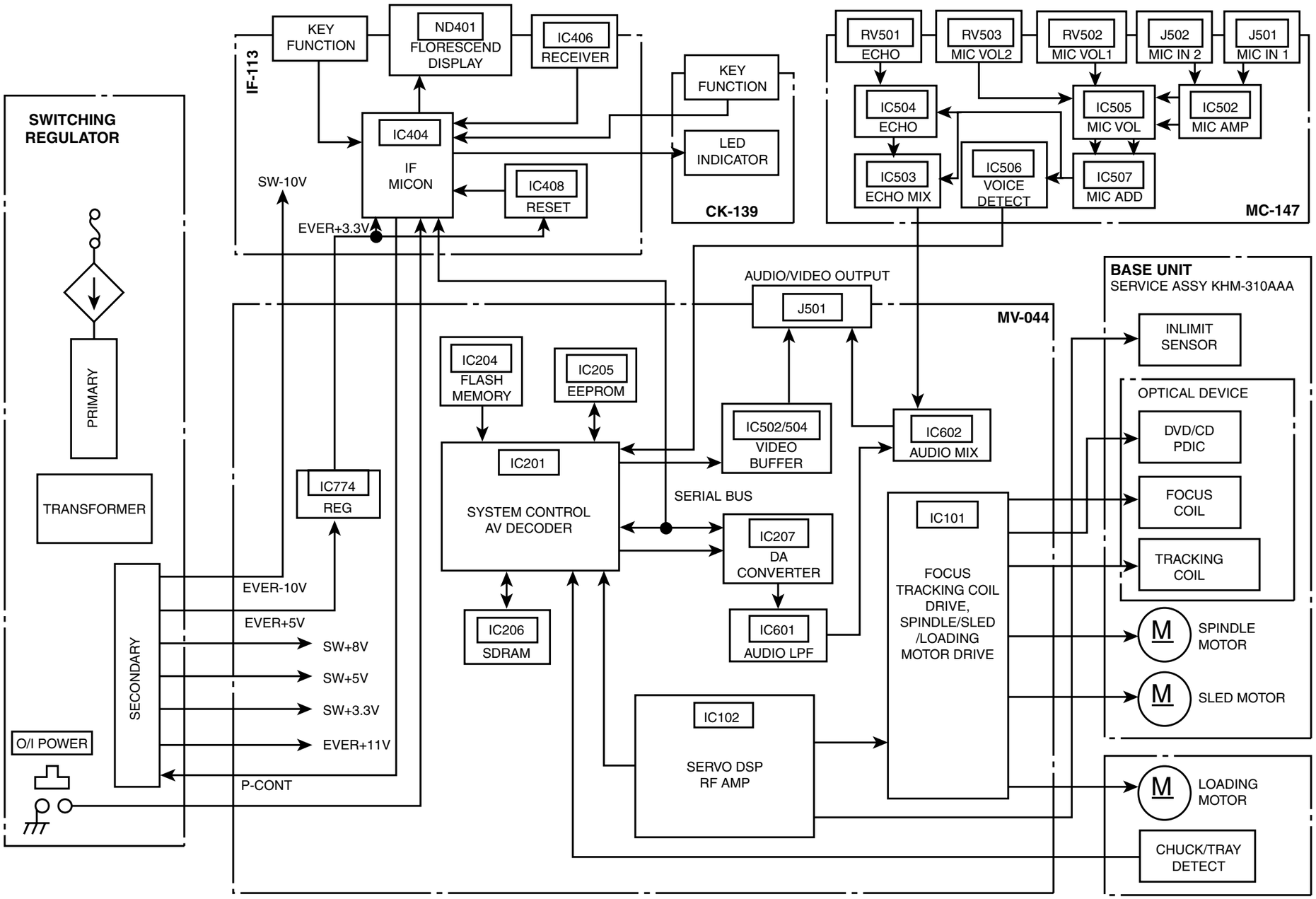
2-9. CIRCUIT BOARDS LOCATION



MEMO

SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

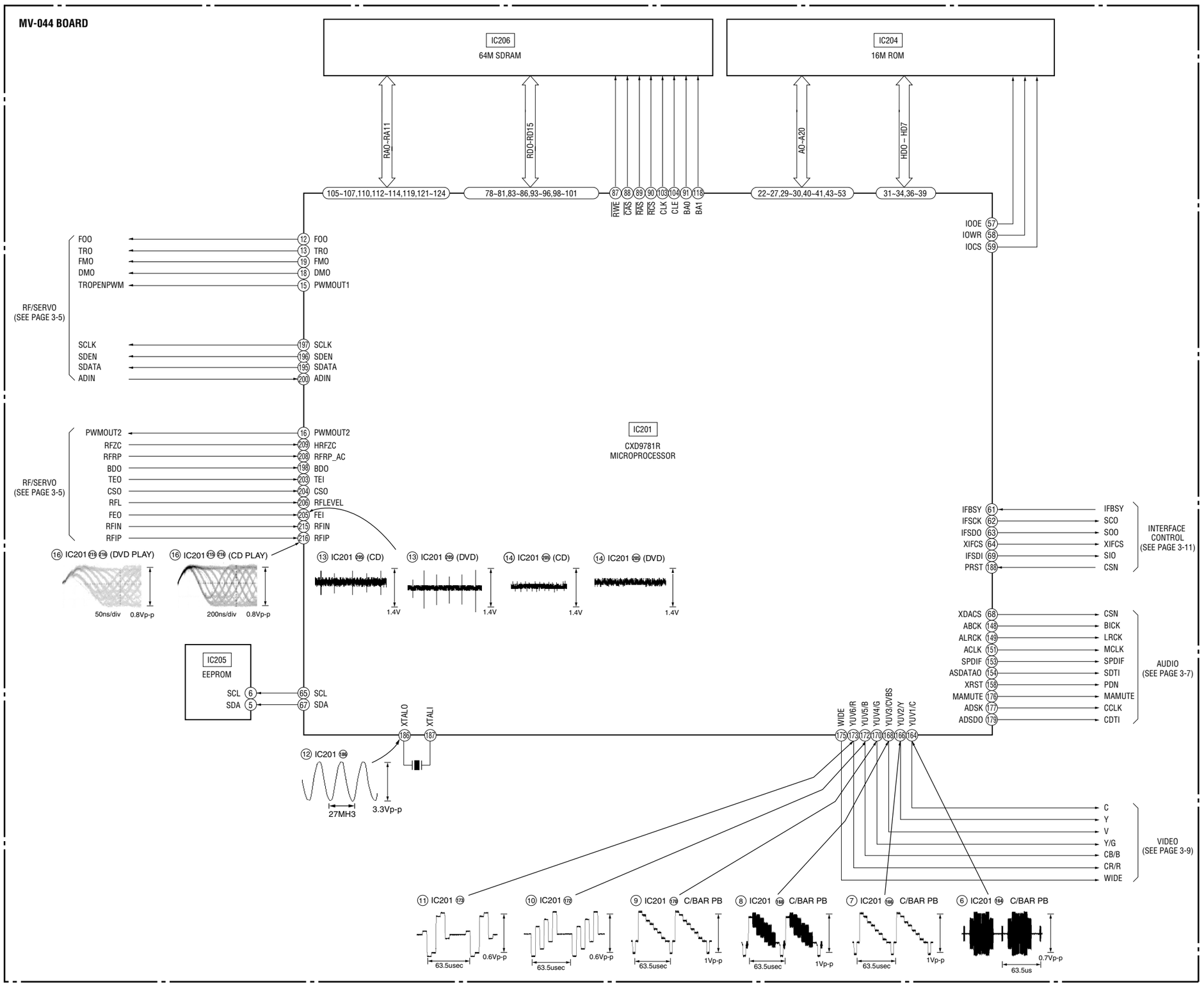


Notes:

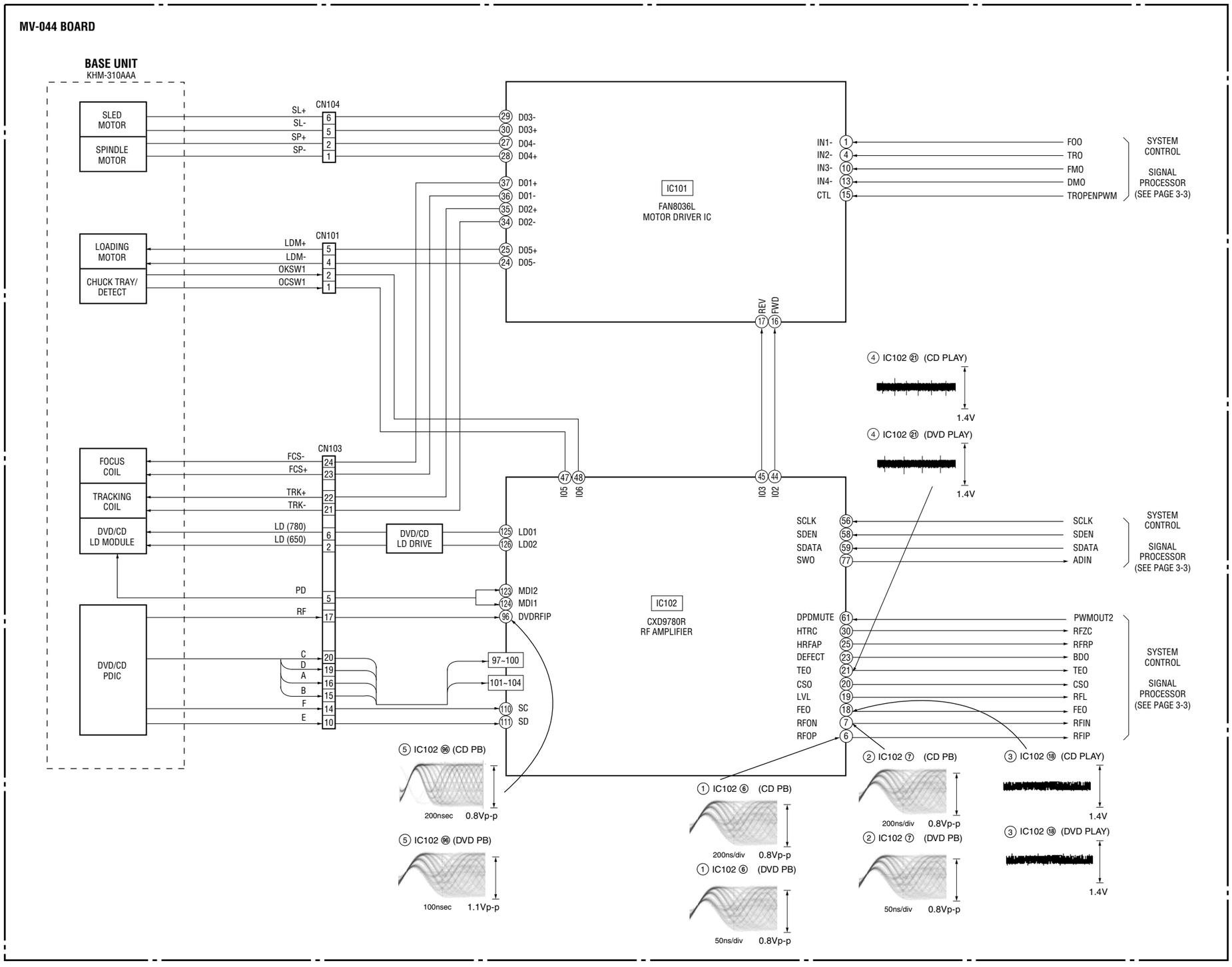
MV-44 mounted PWB must be replaced if IC205 (EEPROM IC) is damaged or not functioning.

The old MV-44 mounted PWB must be completely disposed.

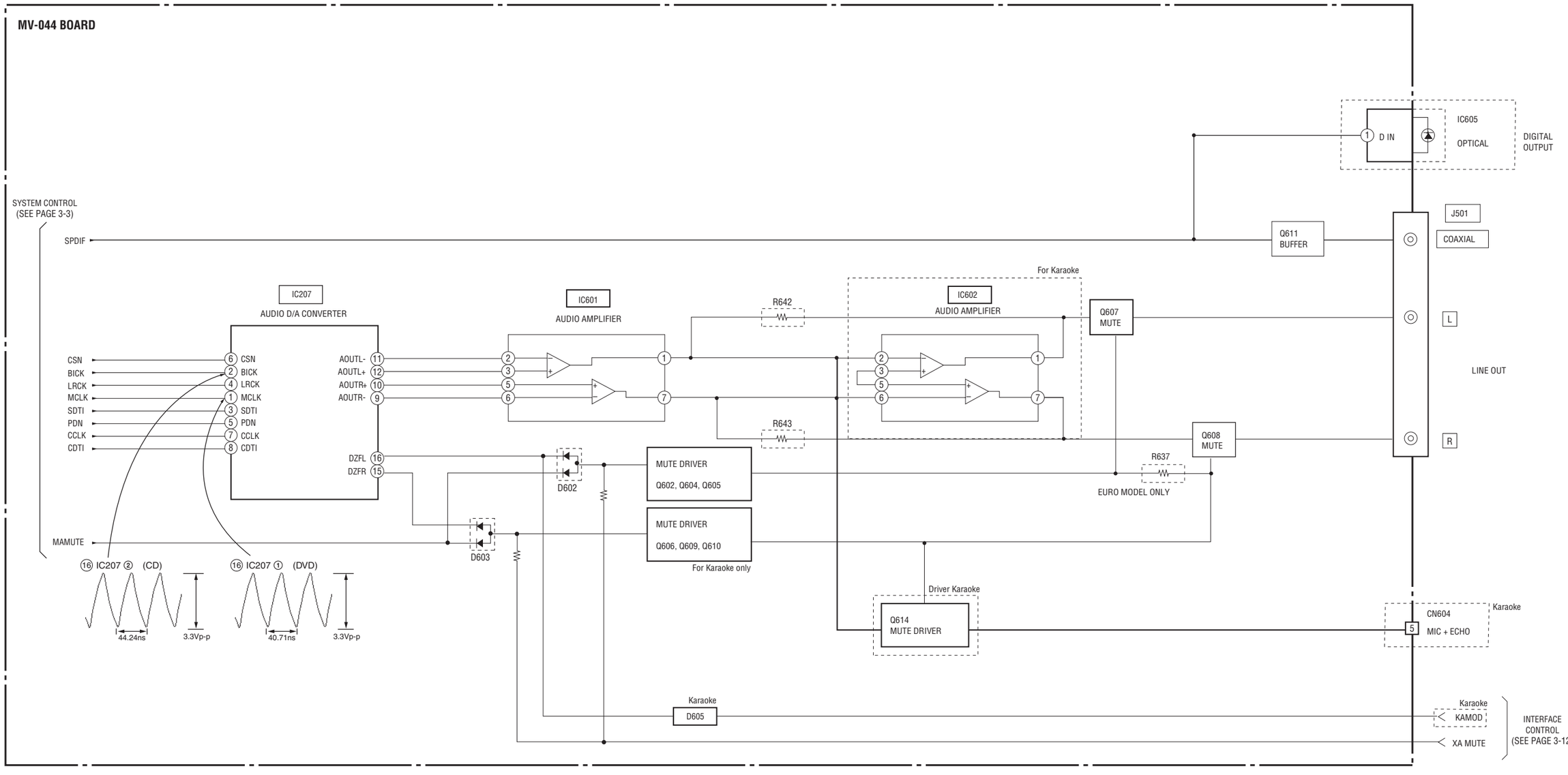
3-2. SYSTEM CONTROL/SIGNAL PROCESSOR BLOCK DIAGRAM



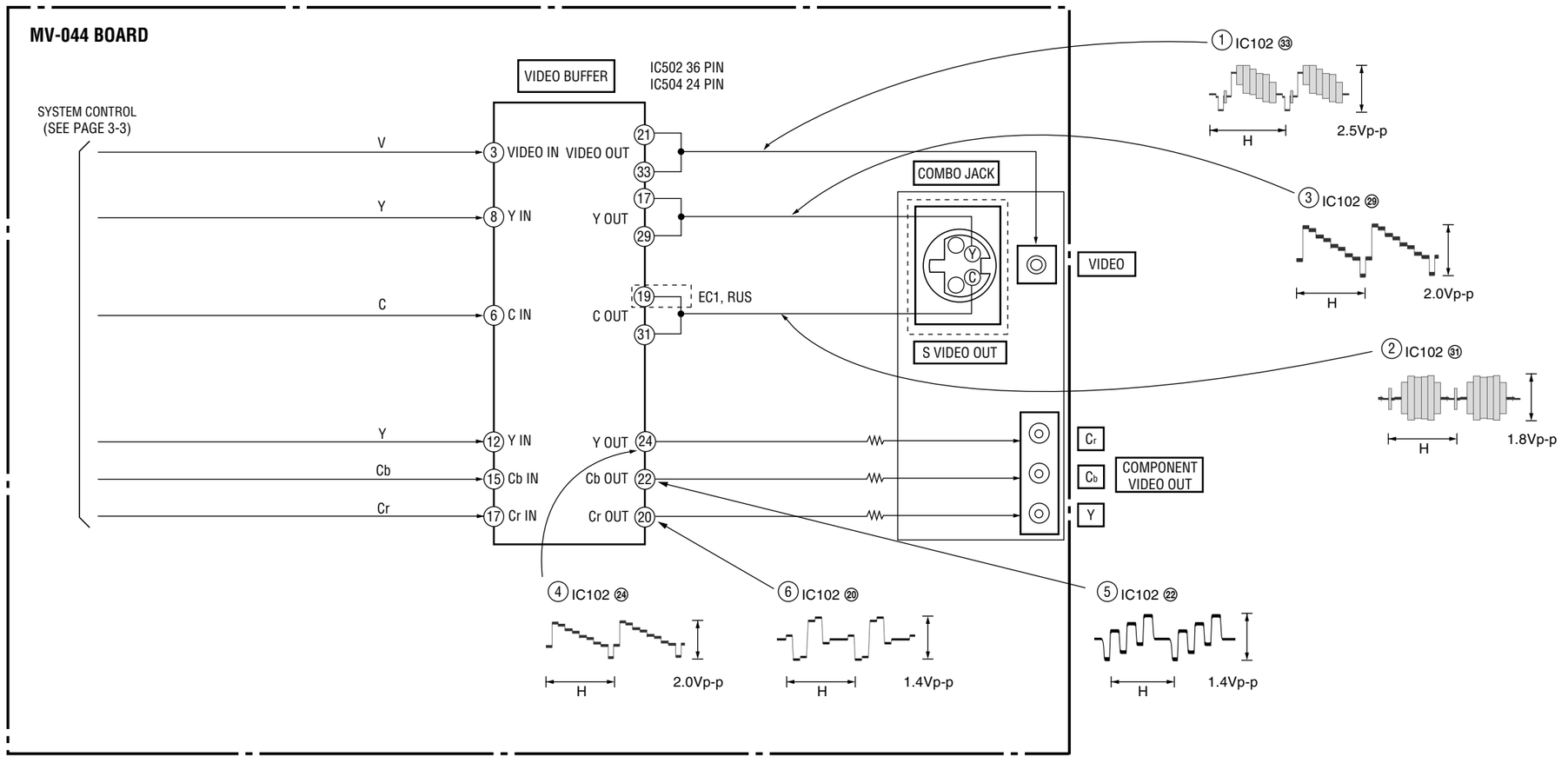
3-3. RF/SERVO BLOCK DIAGRAM



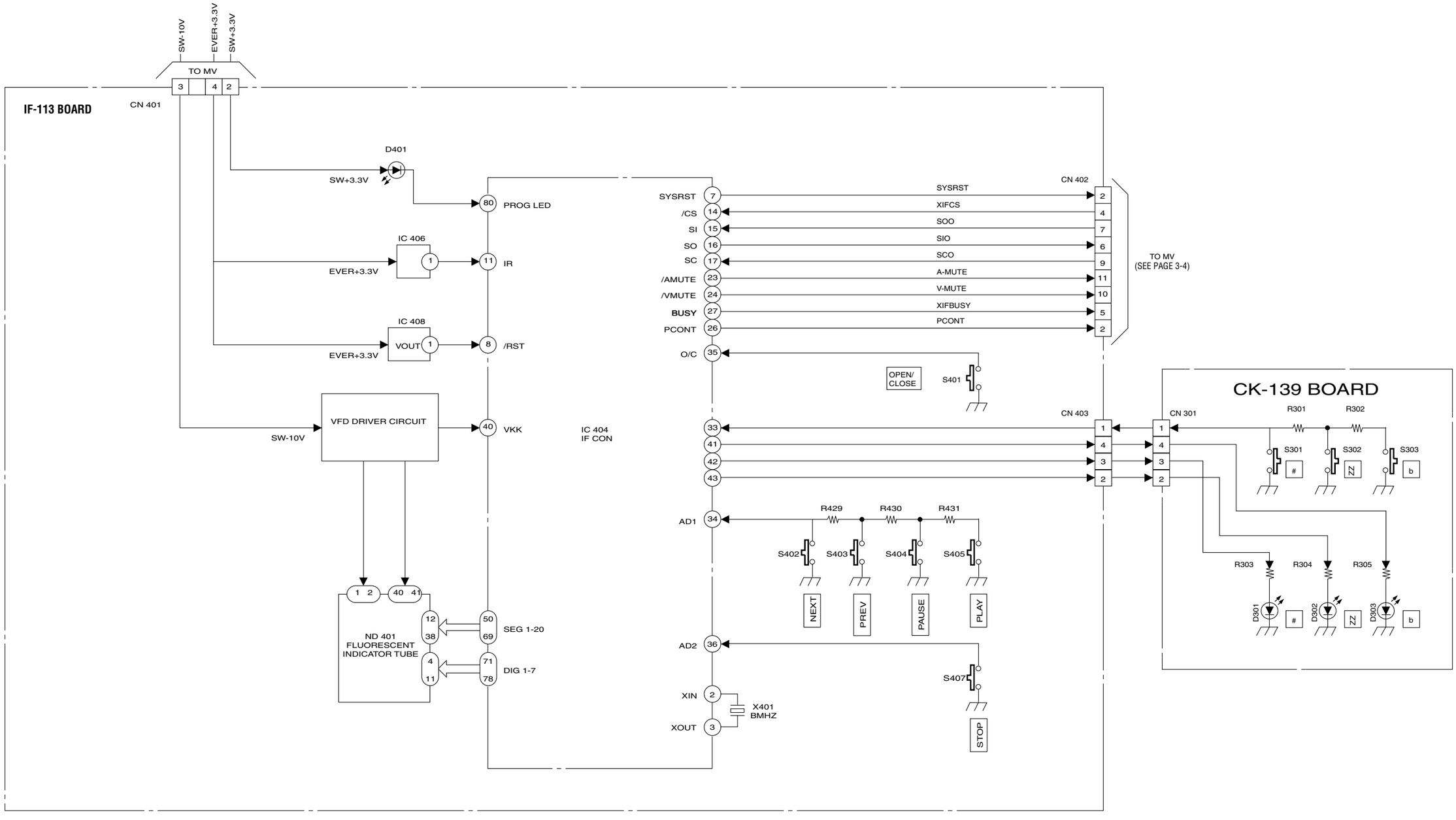
3-4. AUDIO BLOCK DIAGRAM



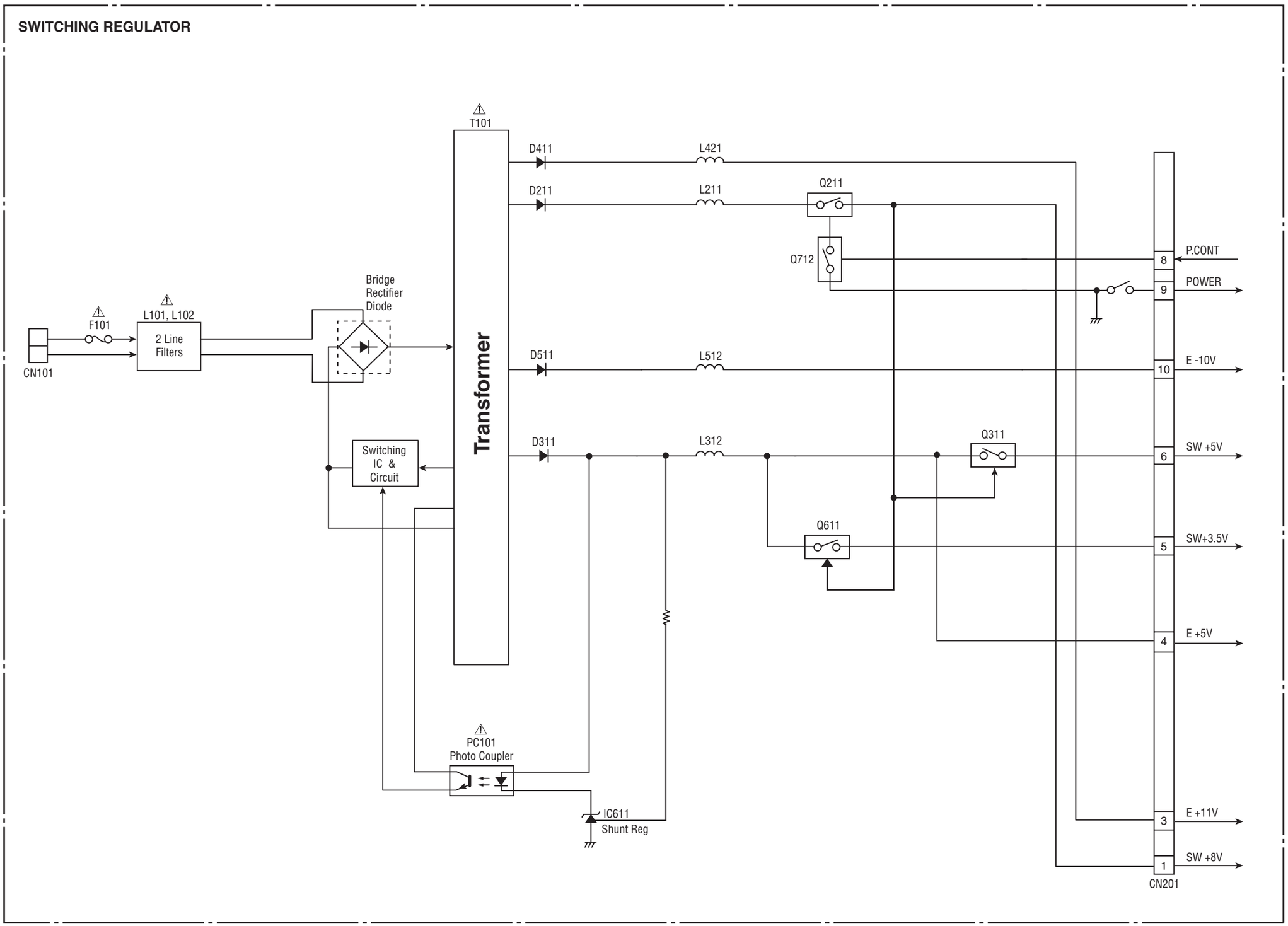
3-5. VIDEO BLOCK DIAGRAM



3-6. INTERFACE CONTROL BLOCK DIAGRAM

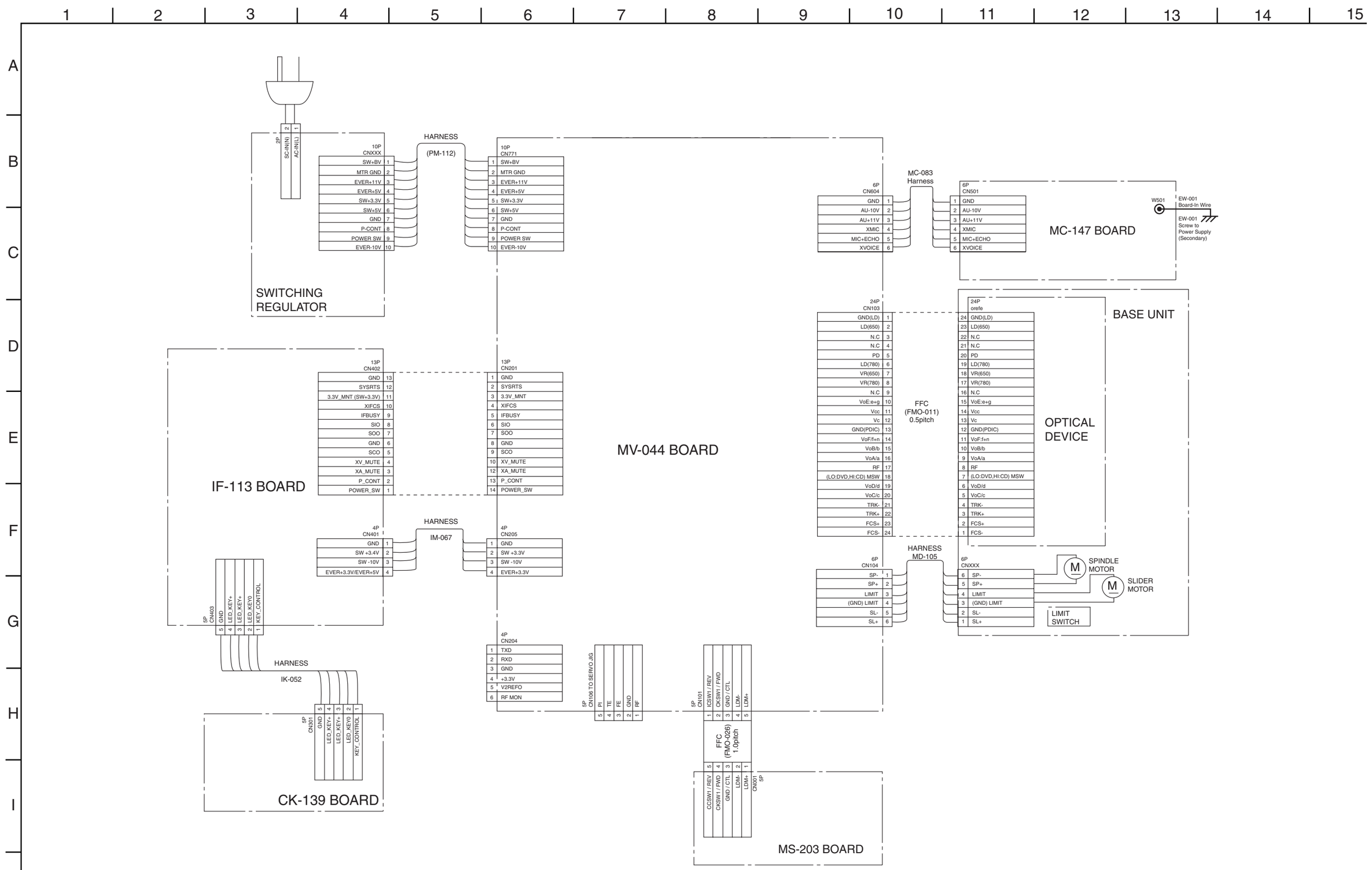


3-7. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block)

For printed wiring boards:

- ○—— : indicates a lead wire mounted on the component side.
- ●—— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▭ : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side A)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side B)	Parts on the parts face side seen from the parts face are indicated.

- Abbreviation
  - BR : Brazilian model
  - SP : Singapore model
  - : Malaysia model
  - : Thailand model
  - : Vietnam model
  - : Philippine model
  - : Indonesia model
  - EA : Saudi Arabia model
  - CN : Chinese model

For schematic diagrams:

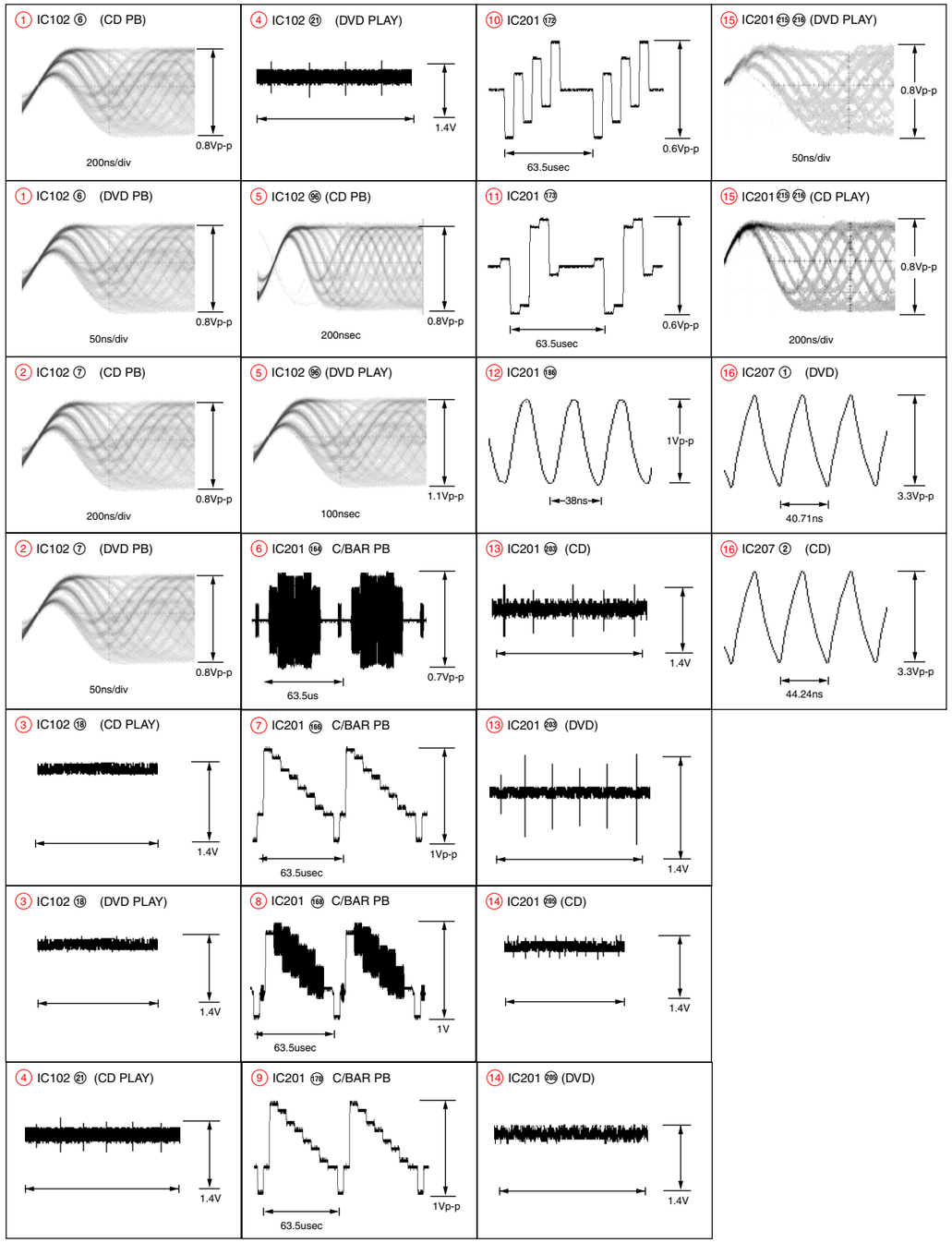
- All capacitors are in µF unless otherwise noted. pF : µµF. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W (Chip resistors : 1/10W) un-less otherwise specified.
  kΩ = 1000Ω, MΩ = 1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : non flammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- B+ : B+ Line.
- B– : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

4-3. WAVEFORM

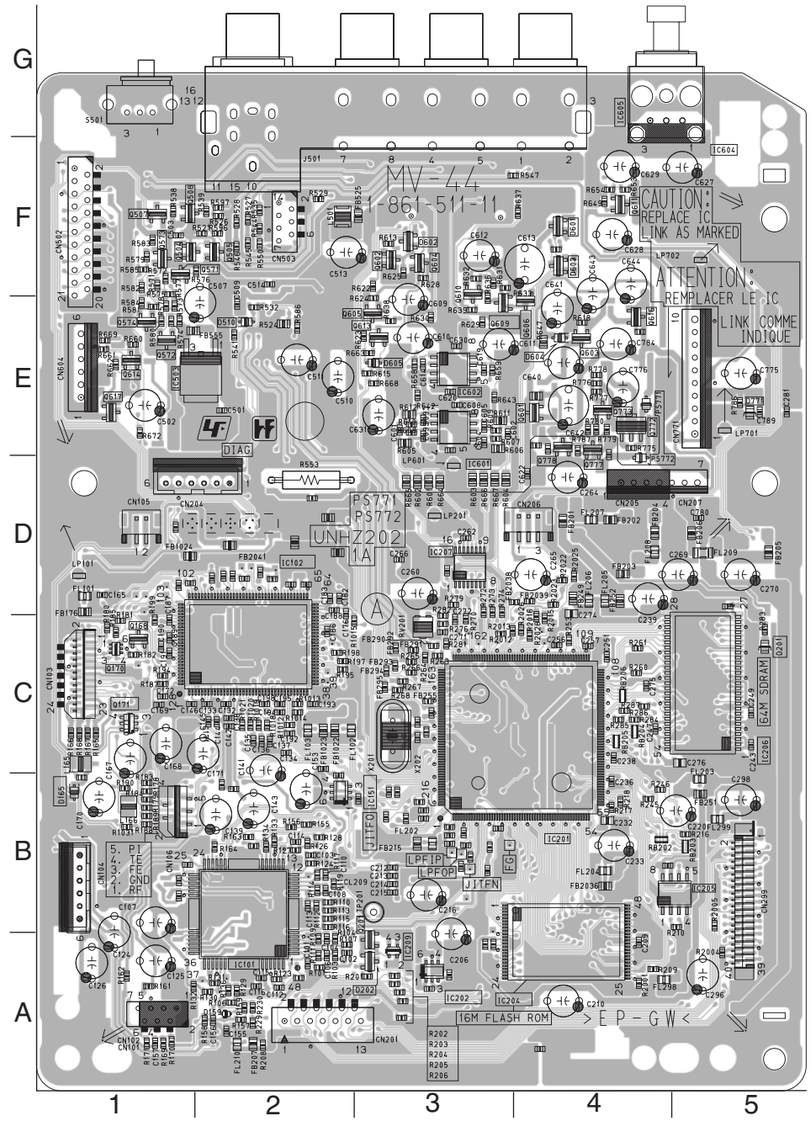
MV-044 BOARD



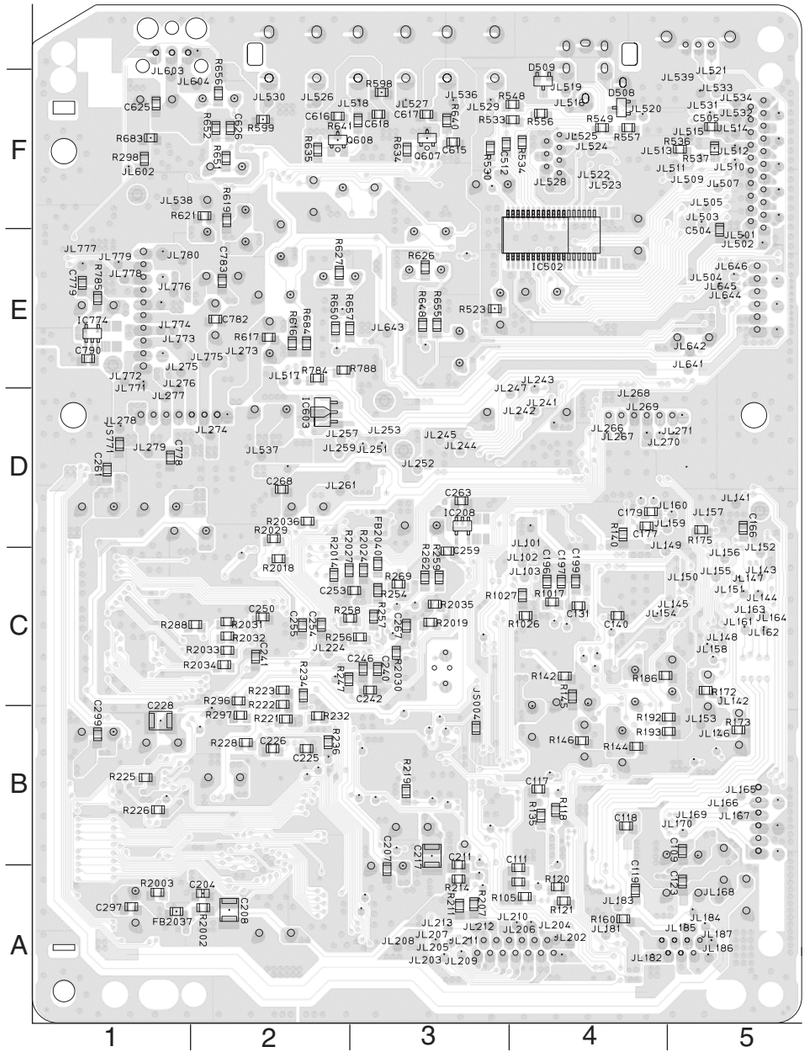
MV-044 (DRIVE, CPU, SERVO-DSP, AVDEC, VIDEO, AUDIO, PS THROUGH) PRINTED WIRING BOARD

• : Uses unleaded solder.

MV-044 BOARD SIDE A

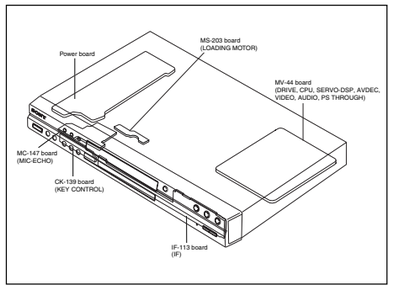


MV-044 BOARD SIDE B



MV-044 BOARD

A SIDE		B SIDE	
IC101	A-2	IC208	D-3
IC102	D-2	IC502	E-4
IC151	B-3	IC603	D-2
IC201	B-4	IC774	E-1
IC202	A-3		
IC204	A-3	Q607	F-3
IC205	B-5	Q608	F-3
IC206	C-5		
IC207	D-3	D508	F-4
IC209	A-3	D509	F-4
IC503	E-1		
IC601	D-3		
IC602	E-3		
IC604	F-5		
IC605	G-4		
Q168	C-1		
Q170	C-1		
Q171	C-1		
Q201	B-3		
Q504	E-1		
Q505	F-2		
Q507	F-1		
Q508	F-2		
Q571	F-2		
Q572	E-1		
Q573	F-1		
Q574	E-1		
Q601	E-4		
Q602	F-3		
Q603	E-4		
Q604	F-3		
Q605	E-3		
Q606	E-4		
Q609	E-3		
Q610	E-3		
Q611	F-4		
Q613	E-3		
Q614	E-1		
Q616	E-4		
Q617	E-1		
Q772	E-4		
Q773	E-4		
Q777	D-4		
Q778	D-4		
D165	B-1		
D201	C-5		
D202	A-3		
D510	E-2		
D601	F-4		
D602	F-3		
D603	F-4		
D604	F-4		
D605	E-3		
D771	E-5		



For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

DRIVE, CPU, SERVO-DSP, AVDEC, VIDEO, AUDIO, PS THROUGH

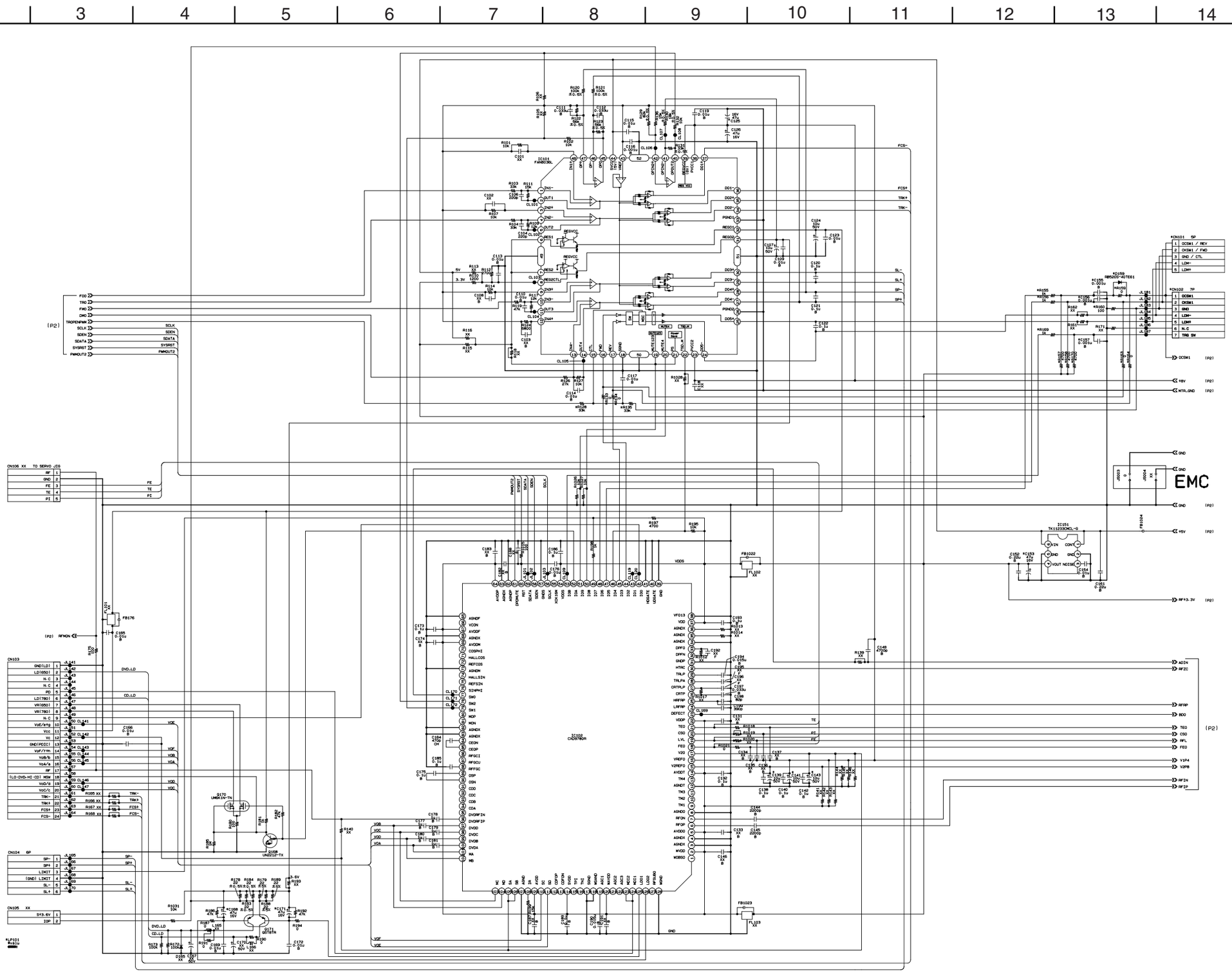
MV-044

For Schematic Diagram

- Refer to page 4-5 for printed wiring board of MV-044 board.
- Refer to page 4-4 for waveform

MV-044 BOARD (1/5)
DRIVE
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

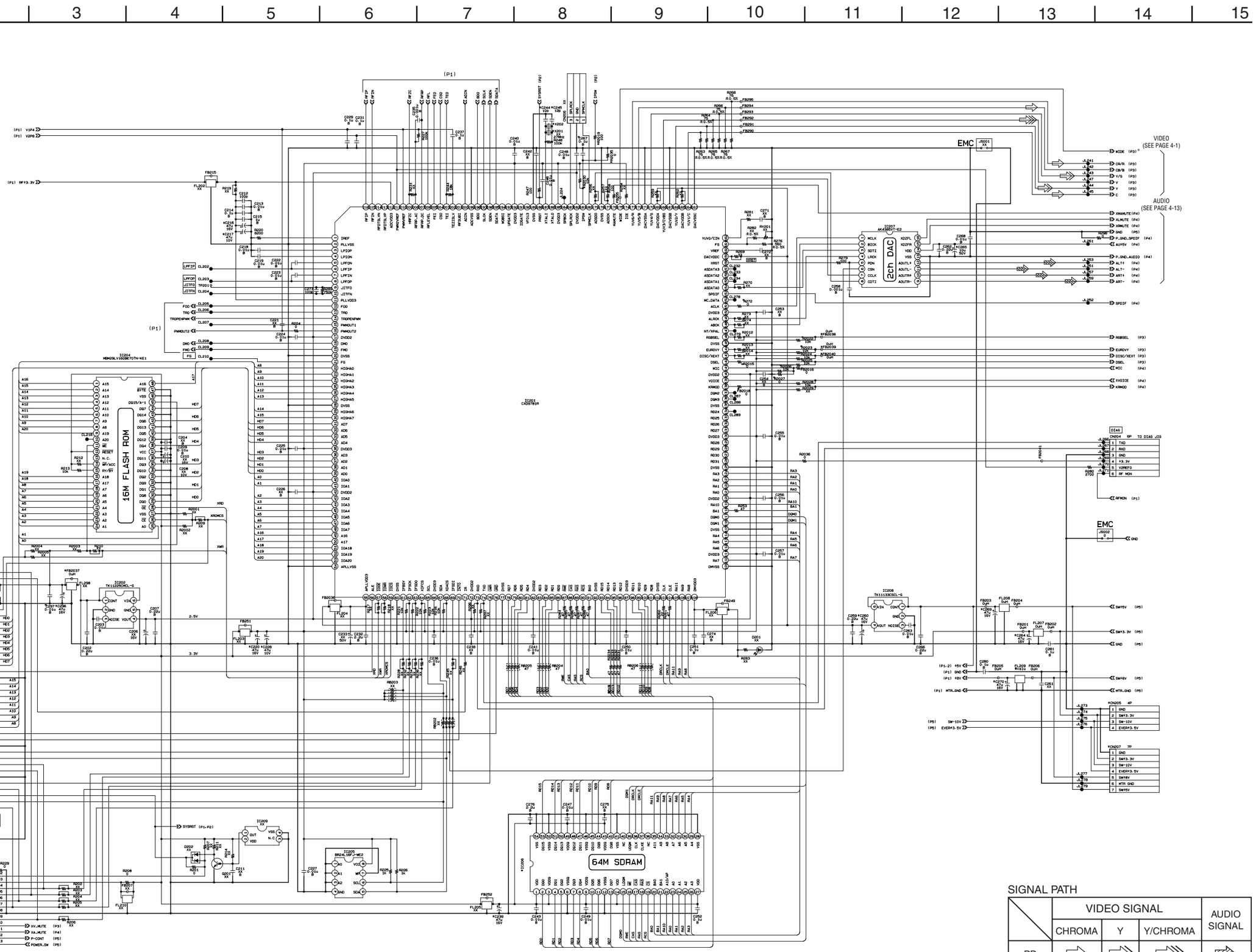


For Schematic Diagram

- Refer to page 4-5 for printed wiring board of MV-044 board.
- Refer to page 4-4 for waveform

MV-044 BOARD (2/5)
CPU, SERVO-DSP, AVDEC
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

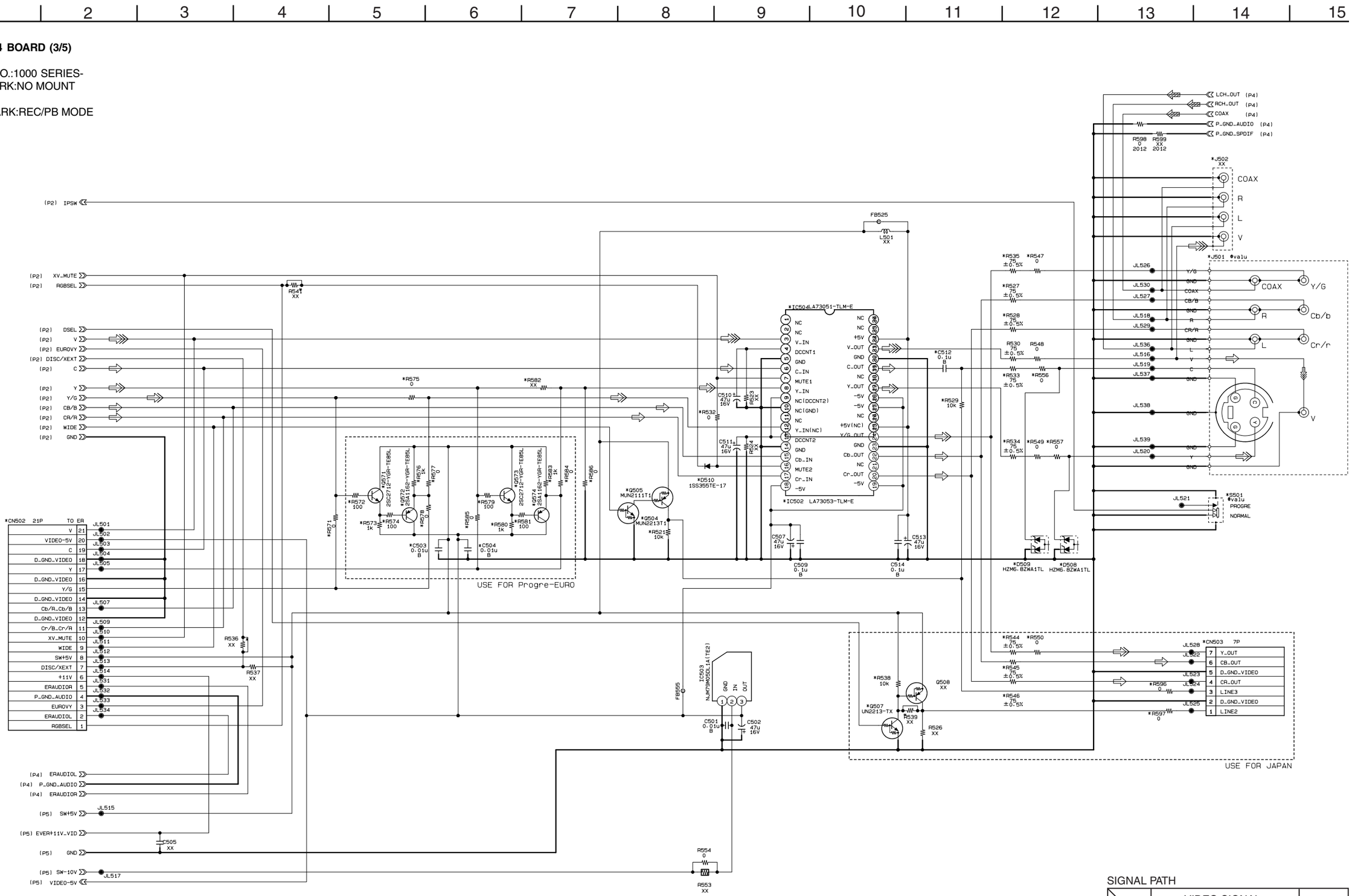
CPU, SERVO-DSP, AVDEC
MV-044 (2/5)

For Schematic Diagram

• Refer to page 4-5 for printed wiring board of MV-044 board.
• Refer to page 4-4 for waveform

MV-044 BOARD (3/5)
VIDEO
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



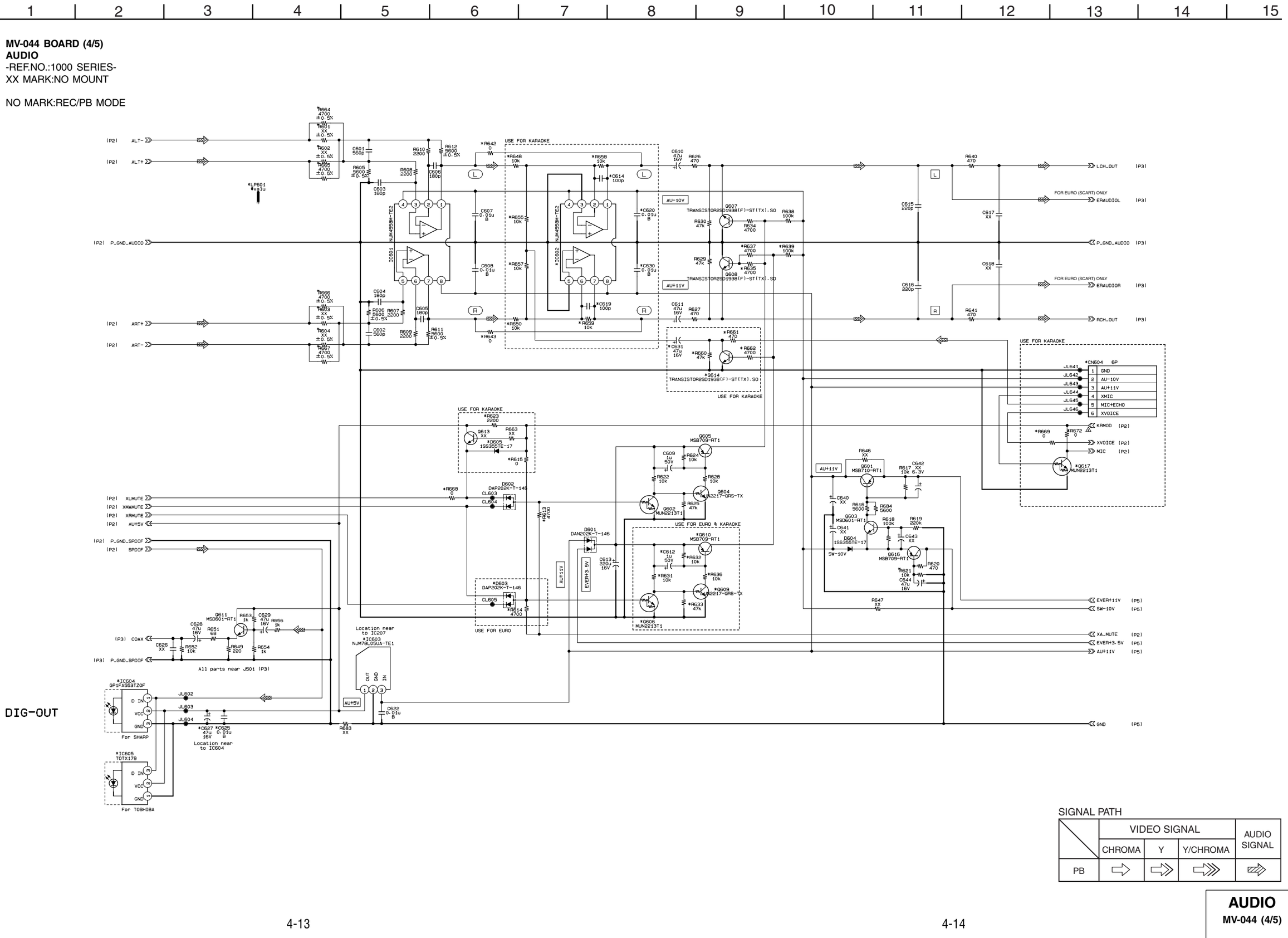
VIDEO
MV-044 (3/5)

For Schematic Diagram

- Refer to page 4-5 for printed wiring board of MV-044 board.
- Refer to page 4-4 for waveform

MV-044 BOARD (4/5)
AUDIO
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



SIGNAL PATH

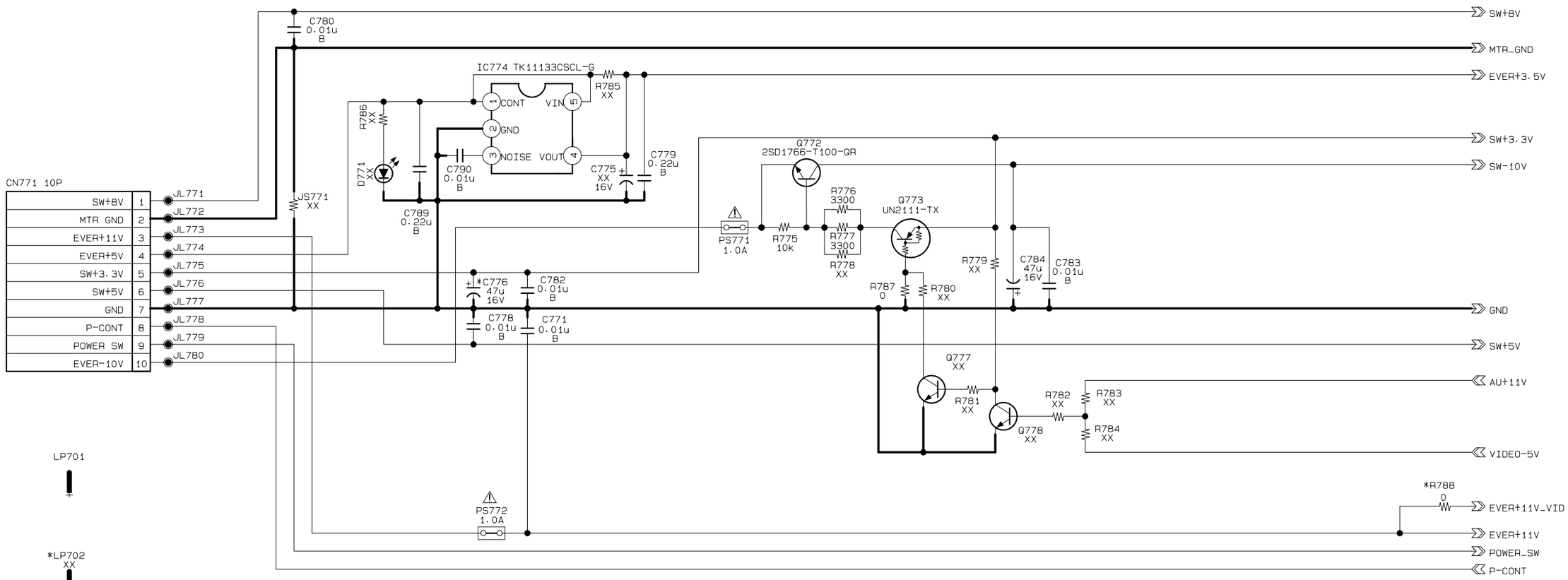
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

For Schematic Diagram

- Refer to page 4-5 for printed wiring board of MV-044 board.
- Refer to page 4-4 for waveform

MV-044 BOARD (5/5)
PS THROUGH
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



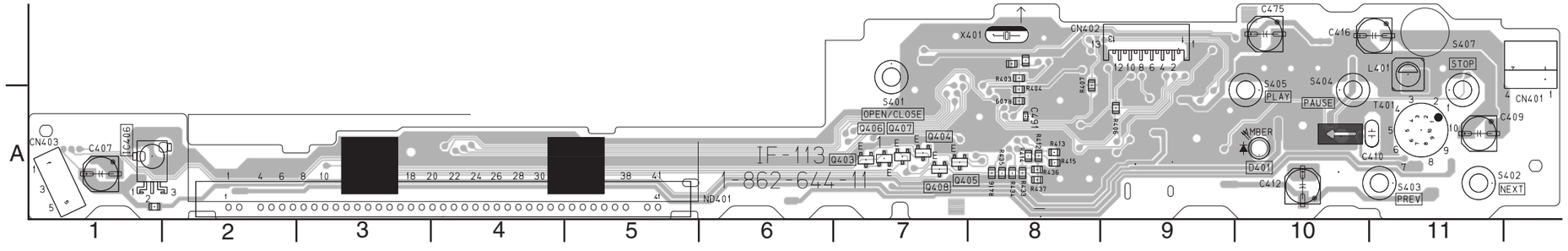
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

PS THROUGH
MV-044 (5/5)

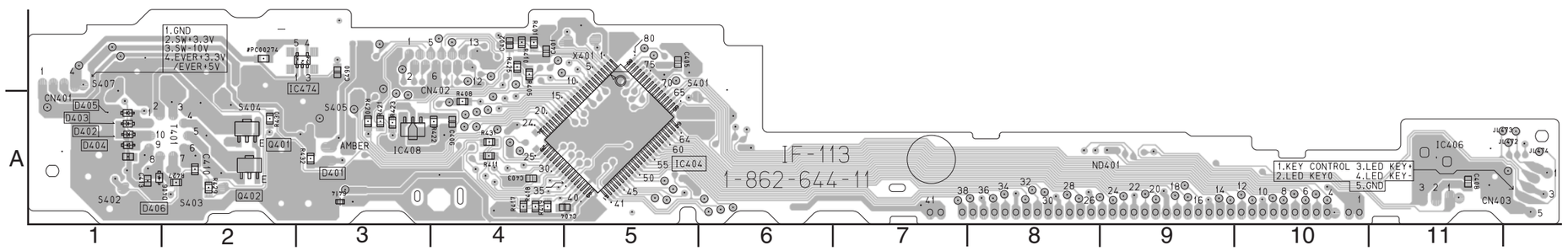
IF-113 (IF) PRINTED WIRING BOARD

• : Uses unleaded solder.

IF-113 BOARD A SIDE

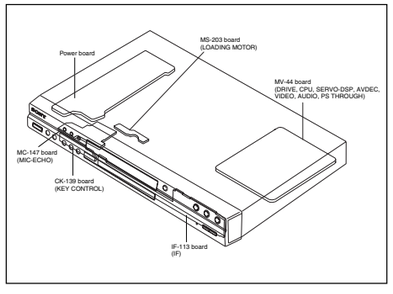


IF-113 BOARD B SIDE



For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



IF-113 BOARD

A SIDE

IC406 A-1

Q403 A-7
Q404 A-7
Q405 A-8

D401 A-10

B SIDE

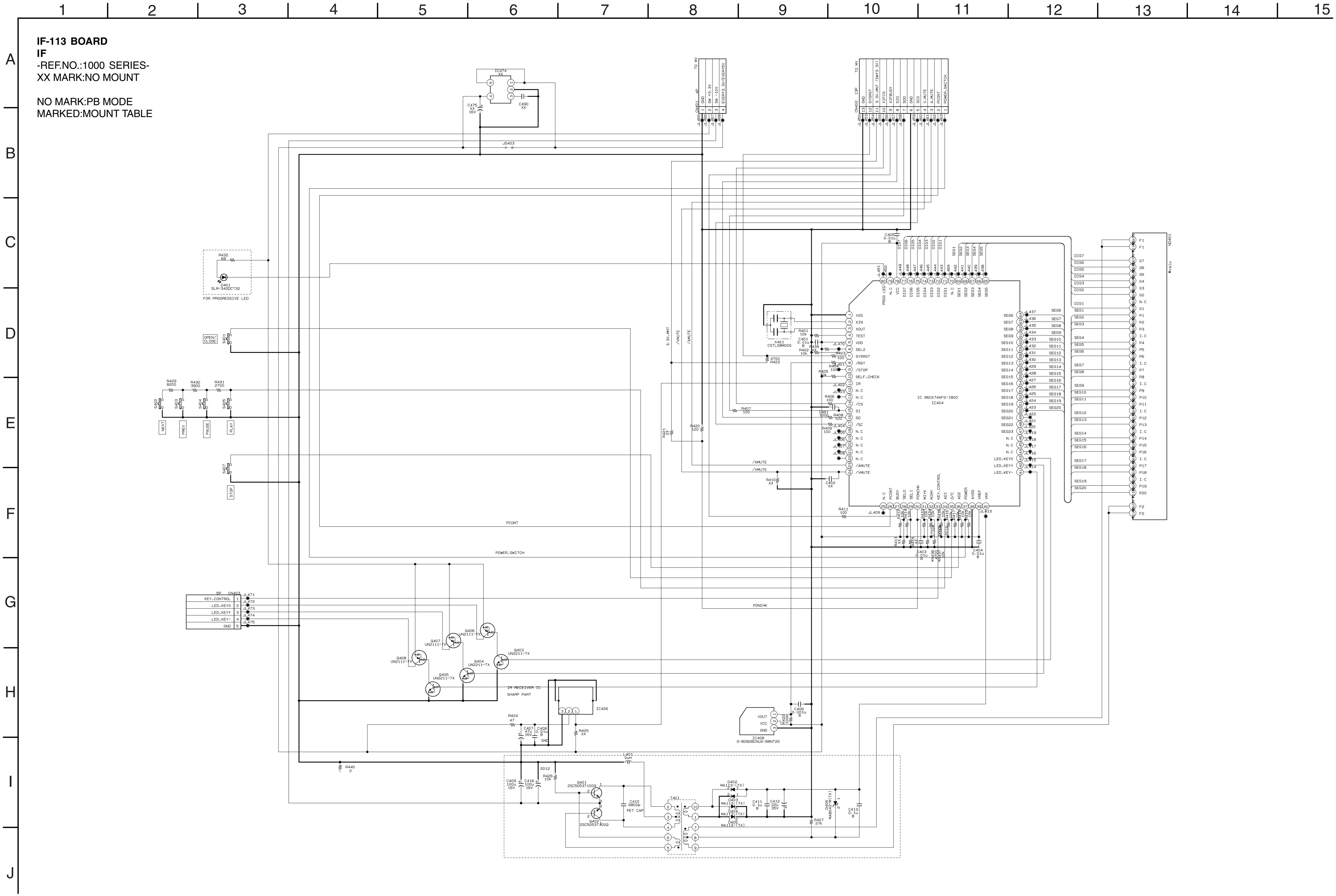
IC404 A-5
IC406 A-11
IC408 A-3
IC474 A-3

Q401 A-2
Q402 A-2

D401 A-3
D402 A-1
D403 A-1
D404 A-1
D405 A-1
D406 A-1

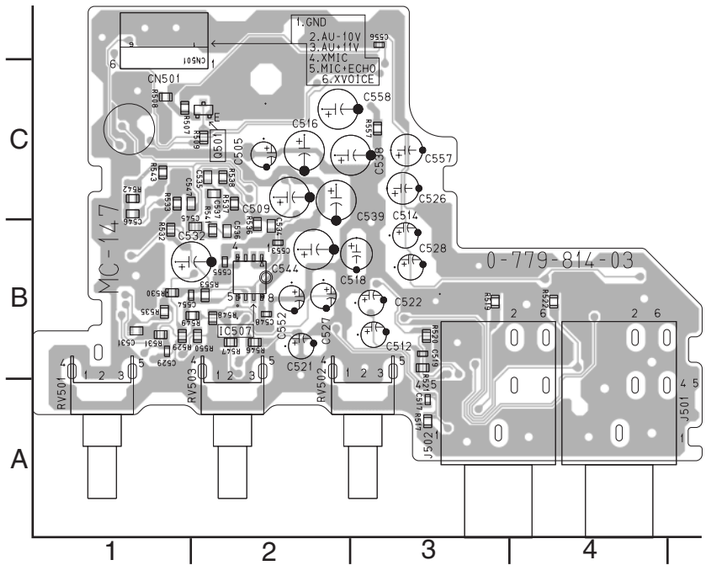
For Schematic Diagram

- Refer to page 4-17 for printed wiring board of IF-113 board.

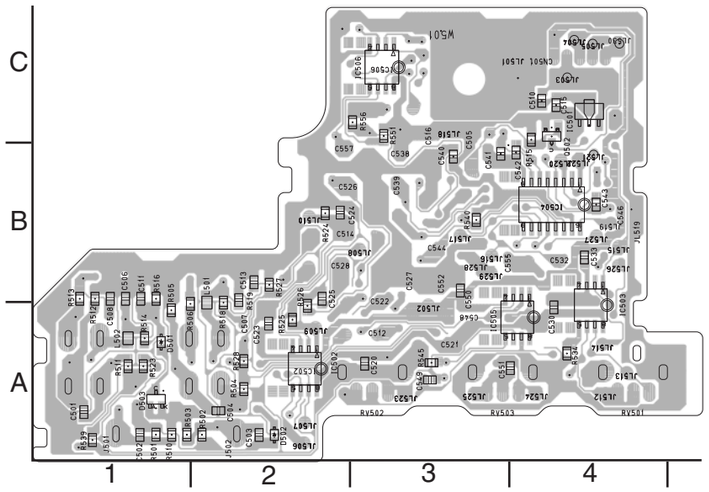

IF-113 BOARD
IF
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:PB MODE
MARKED:MOUNT TABLE
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
TO MV
CN401 4P
GND
SW +3.3V
SW -10V
EVER+3.3V/EVER+5V
CN402 13P
GND
SYSRST
3.3V_MNT (SW+3.3V)
XIFCS
XIFBUSY
SIO
SOO
SCO
V_MUTE
A_MUTE
PCONT
POWER_SWITCH
IC474 XX
C475 XX 16V
C490 XX
JS403
R432 68
D401 SLR-342DCT32
FOR PROGRESSIVE LED
OPEN/CLOSE
S401
R429 8200
R430 3900
R431 2700
S402 NEXT
S403 PREV
S404 PAUSE
S405 PLAY
S407 STOP
X401 CSTLS8M00G
IC 86CK74AFG-1800
IC404
VSS
XIN
XOUT
TEST
VDD
SEL2
SYSRST
/RST
/STOP
SELF_CHECK
IR
/CS
SI
SO
/SC
/AMUTE
/VMUTE
PROG LED
PCONT
BUSY
SEL0
SEL1
PONCHK
MIYK
MIMY
KEY_CONTROL
AD1
O/C
AD2
POWER
AVSS
VREF
VKK
LED_KEY0
LED_KEY+
LED_KEY-
ND401
3.3V_MNT
PCONT
POWER_SWITCH
PONCHK
5P CN403
KEY_CONTROL
LED_KEY0
LED_KEY+
LED_KEY-
GND
Q403 UN2211-TX
Q404 UN2211-TX
Q405 UN2211-TX
Q406 UN2111-TX
Q407 UN2111-TX
Q408 UN2111-TX
IR RECEIVER IC
SHARP PART
IC406
IC408 S-80828CNUA-B8NT2G
VOUT
VCC
GND
R440 0
L401 0uH
Q401 2SC5053T100Q
Q402 2SC5053T100Q
C410 6800p PET CAP
T401
D402 MA113-(TX)
D403 MA113-(TX)
D404 MA113-(TX)
D405 MA113-(TX)
D406 MA8043-M(TX)
C409 100u 16V
C416 100u 16V
R426 10k
R427 27k
C411 0.1u B
C412 22u 35V
C413 0.1u B

MC-147 (MIC-ECHO) PRINTED WIRING BOARD

MC-147 BOARD A SIDE



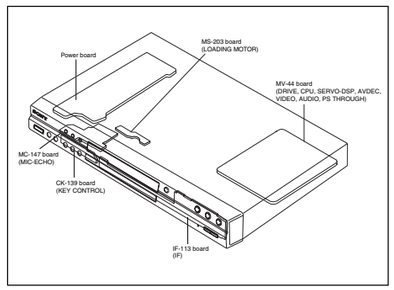
MC-147 BOARD B SIDE



• : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



MC-147 BOARD

A SIDE

IC507 B-2

Q501 C-2

B SIDE

IC501 C-4
IC502 A-2
IC503 A-4
IC504 B-4
IC505 A-3
IC506 C-3

Q502 B-4

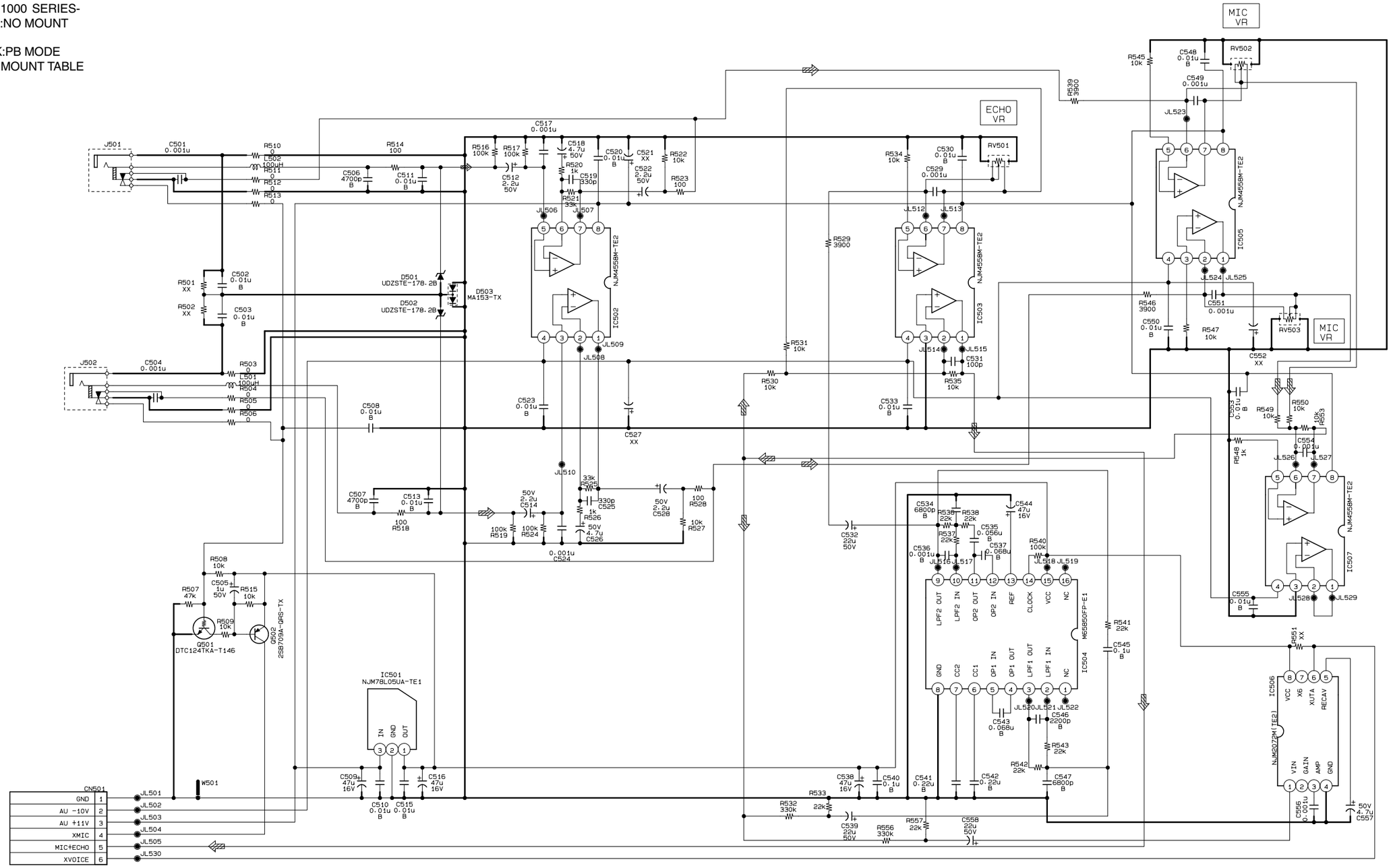
D501 A-1
D502 A-2
D503 A-1

For Schematic Diagram

• Refer to page 4-21 for printed wiring board of MC-147 board.

MC-147 BOARD
MIC-ECHO
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE



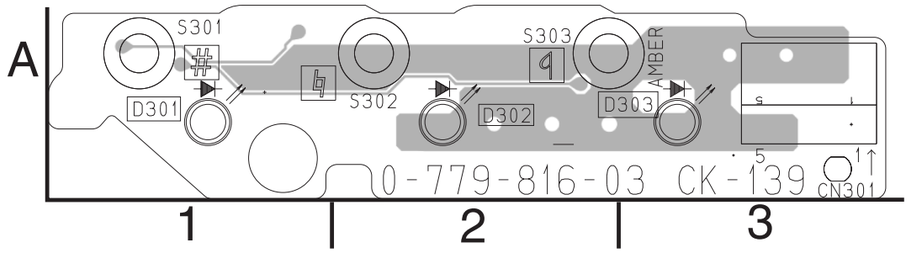
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

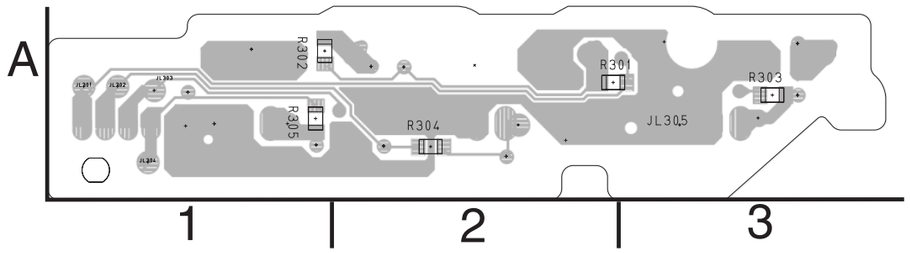
MIC-ECHO
MC-147

CK-139 (KEY CONTROL) PRINTED WIRING BOARD

CK-139 BOARD A SIDE



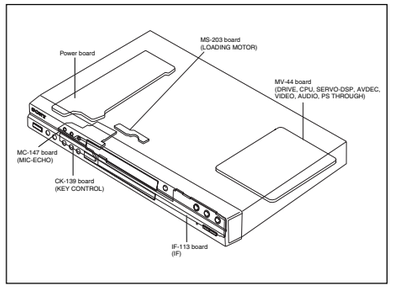
CK-139 BOARD B SIDE



• : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



CK-139 BOARD

A SIDE

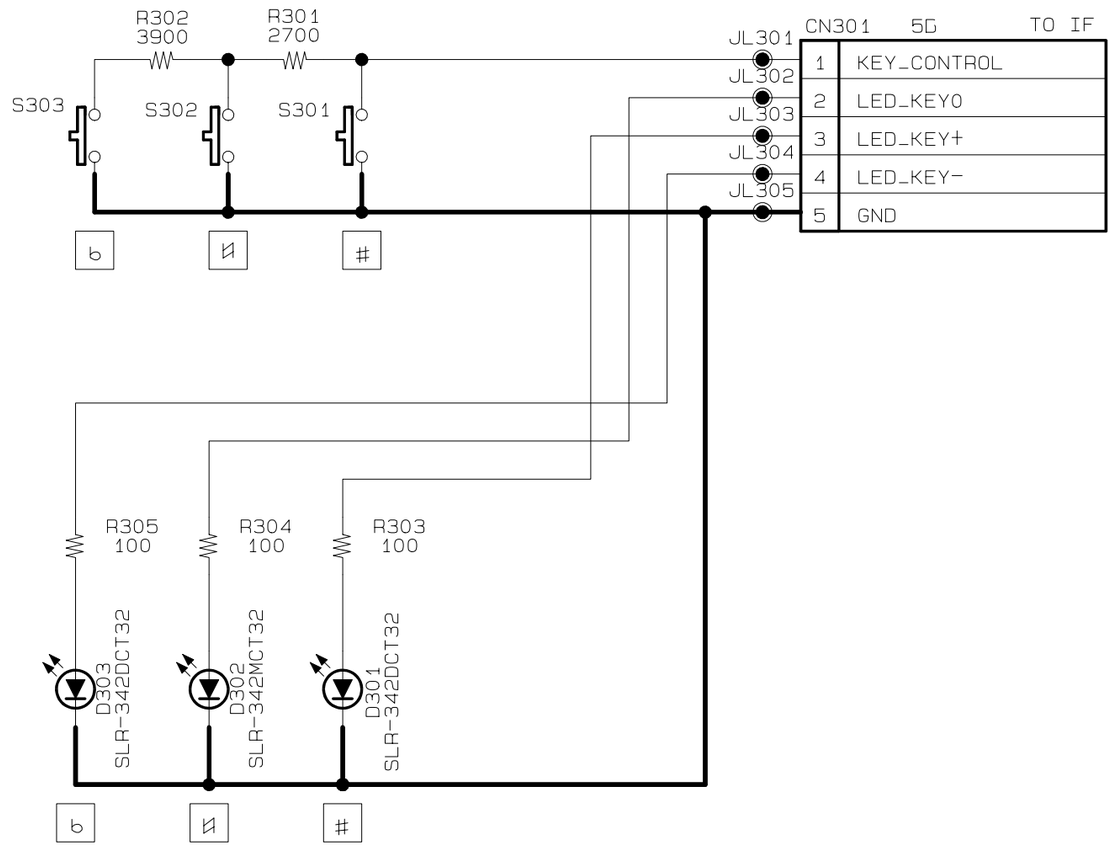
D301	A-1
D302	A-2
D303	A-3

For Schematic Diagram

• Refer to page 4-25 for printed wiring board of CK-139 board.

CK-139 BOARD
KEY CONTROL
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE

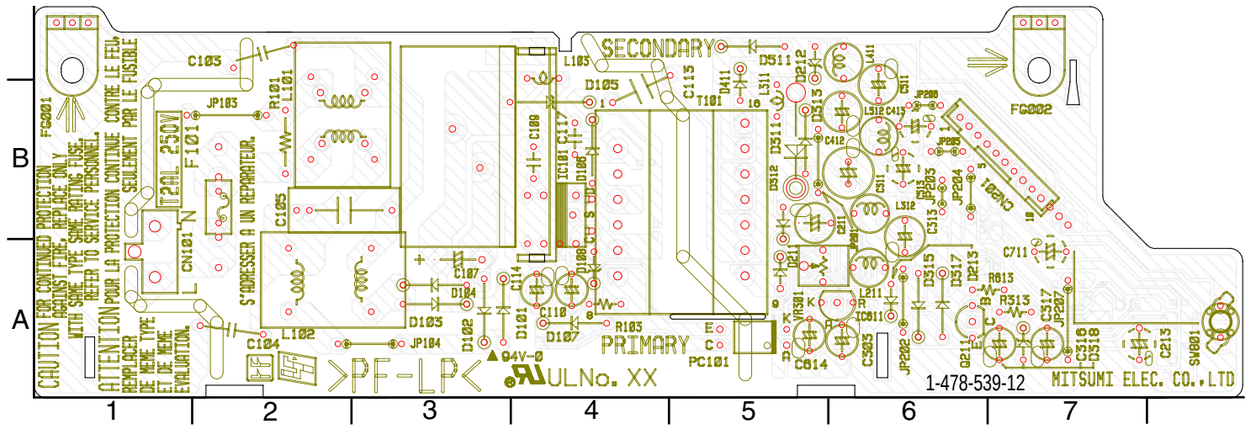


KEY CONTROL
CK-139

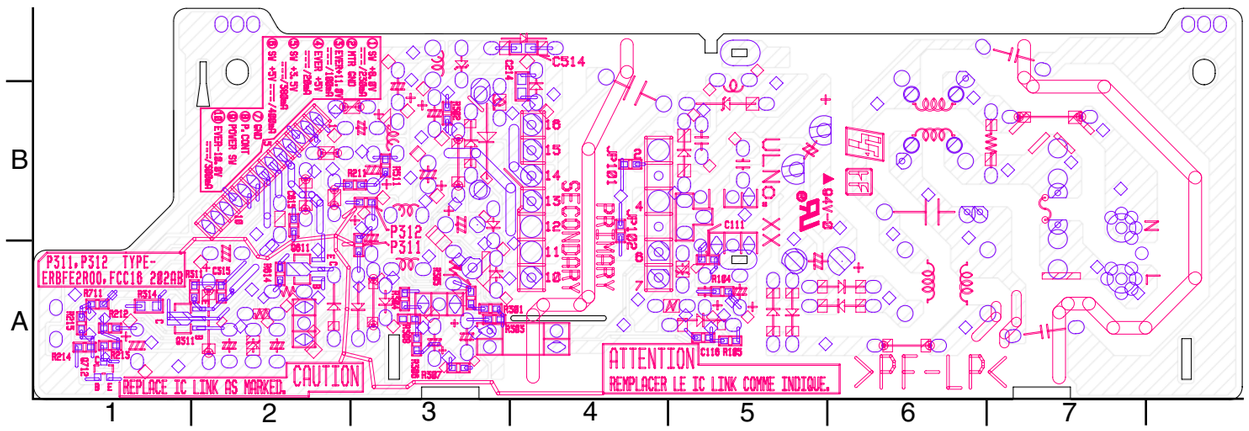
POWER BLOCK (SRV1501WW) PRINTED WIRING BOARD

• 4F : Uses unleaded solder.

POWER BOARD (SRV1501WW) (SIDE A)
(E, SP, AUS)

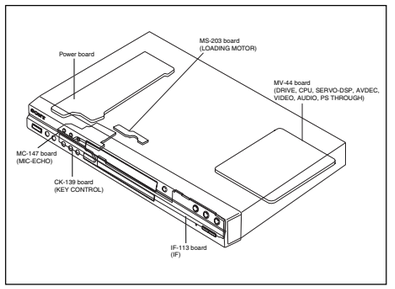

SECONDARY
PRIMARY
CAUTION FOR CONTINUED PROTECTION AGAINST FIRE, REPLACE ONLY WITH SAME TYPE 5AMP RATING FUSE. REFER TO SERVICE PERSONNEL.
ATTENTION POUR LA PROTECTION CONTINUE CONTRE LE FEU REMPLACER SEULEMENT PAR LE FUSIBLE DE MEME TYPE ET DE MEME EVALUATION.
T2.5L 250V
F101
S'ADRESSER A UN REPARATEUR.
>PF-LPK
ULNo. XX
1-478-539-12
MITSUMI ELEC. CO.,LTD
1 2 3 4 5 6 7
A
B

POWER BOARD (SRV1501WW) (SIDE B)
(E, SP, AUS)



For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.


Power board
MS-203 board (LOADING MOTOR)
MV-44 board (DRIVE, CPU, SERVO-DSP, AVDEC, VIDEO, AUDIO, PS THROUGH)
MC-147 board (MIC-ECHO)
CK-139 board (KEY CONTROL)
IF-113 board (IF)

POWER BOARD (SRV1501WW)

A SIDE

IC101 B-4
IC611 A-6

Q211 A-6

D101 A-4
D102 A-3
D103 A-3
D104 A-3
D105 B-4
D106 B-4
D107 A-4
D108 A-4
D211 A-5
D212 C-5
D213 A-6
D311 B-5
D312 B-5
D313 B-5
D315 A-6
D317 A-6
D318 A-7
D411 B-5
D511 C-5

B SIDE

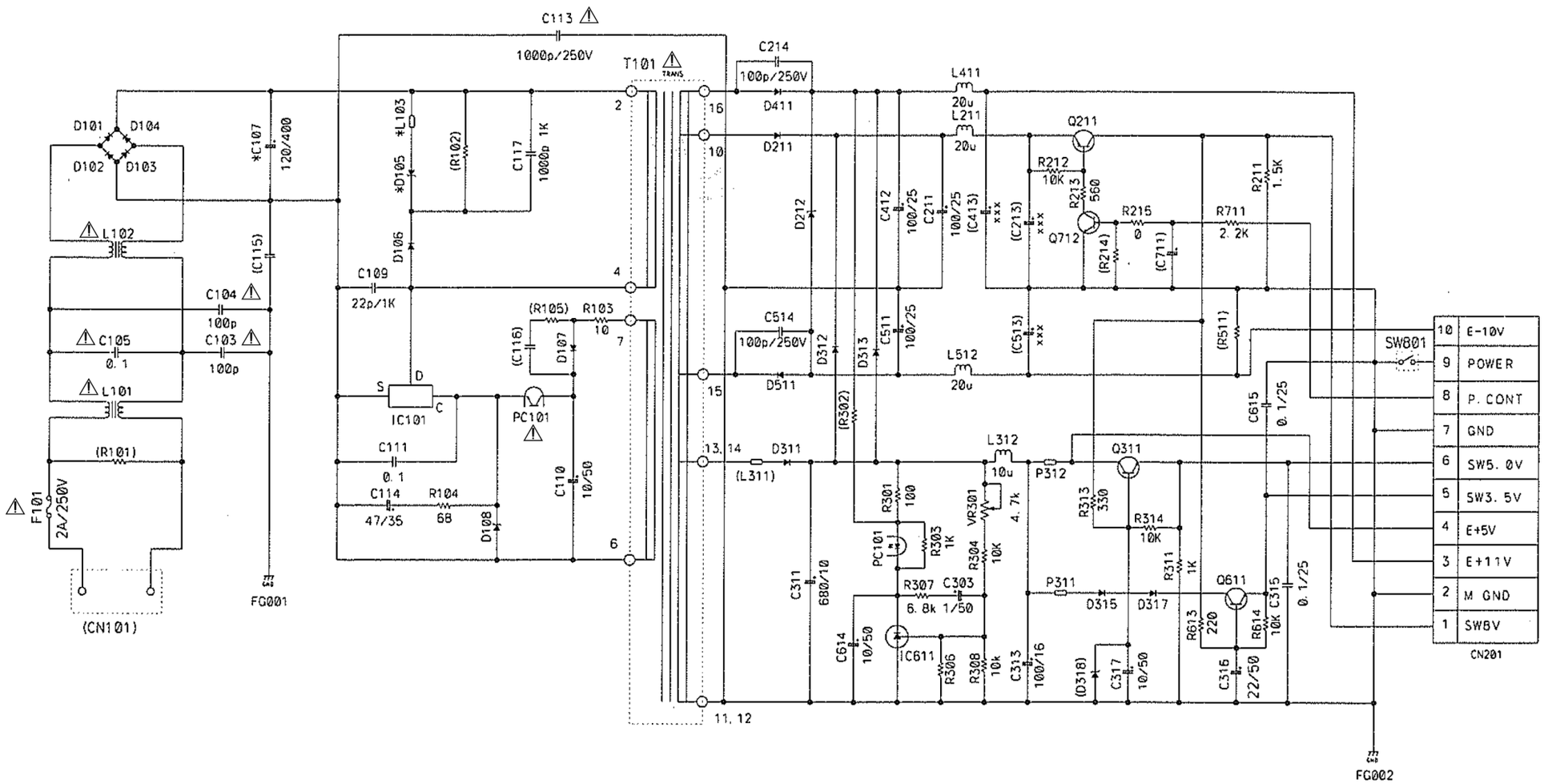
Q311 A-1
Q611 A-2
Q712 A-1

For Schematic Diagram

• Refer to page 4-29 for printed wiring board of Power Board.

POWER BOARD
POWER BLOCK (SRV1501WW)
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE



Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

POWER BOARD
POWER BLOCK (SRV1501WW)

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MV-044 BOARD IC201)

Pin No.	Pin name	Type	Function
1	IREF	Analog Input	Current reference input. It generates reference current for data PLL. Connect an external 100K resistor to this pin and PLLVSS.
2	PLLVSS	Ground	Ground pin for data PLL and related analog circuitry
3	LPIOP	Analog Output	Positive output of the low pass filter
4	LPION	Analog Output	Negative output of the low pass filter
5	LPFON	Analog Output	Negative output of loop filter amplifier
6	LPFIP	Analog Input	Positive input of loop filter amplifier
7	LPFIN	Analog Input	Negative input of loop filter amplifier
8	LDFOP	Analog Output	Positive output of loop filter amplifier
9	JITFO	Analog Output	RF jitter meter output
10	JITFN	Analog Input	Negative input of the operation amplifier for RF jigger meter
11	PLLVDD3	Power	3.3V power pin for data PLL and related analog circuitry
12	FOO	Analog Output	Focus servo output. PDM output of focus servo compensator
13	TRO	Analog Output	Tracking servo output. PDM output of tracking servo compensator
14	TROPENPWM	Analog Output	Tray open output, controlled by microcontroller. This is PWM output for TRWMEN27hRW2=1 or is digital output for TRWMEN27hRW2=0
15	PWMOUT1	Analog Output	The 1st general PWM output
16	PWMOUT2	Analog Output	The 2nd general PWM output
17	DVDD2	Power	2.5V power pin for internal fully digital circuitry
18	DMO	Analog Output	Disk motor control output. PWM output
19	FMO	Analog Output	Feed motor control. PWM output
20	DVSS	Ground	Ground pin for internal fully digital circuitry
21	FG	Input	Motor Hall sensor input
22	HIGHA0	Inout 2~16MA, SR PU	Microcontroller address 8
23	HIGHA1	Inout 2~16MA, SR PU	Microcontroller address 9
24	HIGHA2	Inout 2~16MA, SR PU	Microcontroller address 10
25	HIGHA3	Inout 2~16MA, SR PU	Microcontroller address 11
26	HIGHA4	Inout 2~16MA, SR PU	Microcontroller address 12
27	HIGHA5	Inout 2~16MA, SR PU	Microcontroller address 13
28	DVSS	Ground	Ground pin for internal digital circuitry
29	HIGHA6	Inout 2~16MA, SR PU	Microcontroller address 14
30	HIGHA7	Inout 2~16MA, SR PU	Microcontroller address 15
31	AD7	Inout 2~16MA, SR	Microcontroller address/data 7
32	AD6	Inout 2~16MA, SR	Microcontroller address/data 6
33	AD5	Inout 2~16MA, SR	Microcontroller address/data 5

Pin No.	Pin name	Type	Function
34	AD4	Inout 2~16MA, SR	Microcontroller address/data 4
35	DVDD3	Power	3.3V power pin for internal digital circuitry
36	AD3	Inout 2~16MA, SR	Microcontroller address/data 3
37	AD2	Inout 2~16MA, SR	Microcontroller address/data 2
38	AD1	Inout 2~16MA, SR	Microcontroller address/data 1
39	AD0	Inout 2~16MA, SR	Microcontroller address/data 0
40	IOA0	Inout 2~16MA, SR PU	Microcontroller address 0/10
41	IOA1	Inout 2~16MA, SR PU	Microcontroller address 1/10
42	DVDD2	Power	2.5V power pin for internal digital circuitry
43	IOA2	Inout 2~16MA, SR PU	Microcontroller address 2/10
44	IOA3	Inout 2~16MA, SR PU	Microcontroller address 3/10
45	IOA4	Inout 2~16MA, SR PU	Microcontroller address 4/10
46	IOA5	Inout 2~16MA, SR PU	Microcontroller address 5/10
47	IOA6	Inout 2~16MA, SR PU	Microcontroller address 6/10
48	IOA7	Inout 2~16MA, SR PU	Microcontroller address 7/10
49	A16	Output 2~16MA, SR	Flash address 16
50	A17	Output 2~16MA, SR	Flash address 17
51	IOA18	Inout 2~16MA, SR SMT	Flash address 18/10
52	IOA19	Inout 2~16MA, SR SMT	Flash address 19/10
53	IOA20	Inout 2~16MA, SR SMT	Flash address 20/10 OR Videoin Data PortB 0
54	APLLVSS	Ground	Ground pin for audio clock circuitry
55	APLLVDD3	Power	3.3V Power pin for audio clock circuitry
56	ALE	Inout 2~16MA, SR PU, SMT	Microcontroller address latch enable
57	IOOE#	Inout 2~16MA, SR SMT	Flash output enable, active low / 10
58	IOWR#	Inout 2~16MA, SR SMT	Flash write enable, active low / 10

Pin No.	Pin name	Type	Function
59	IOCS#	Inout 2~16MA, SR PU, SMT	Flash chip select, active low / 10
60	DVSS	Ground	Ground pin for internal digital circuitry
61	UP1_2	Inout 4MA, SR PU, SMT	Microcontroller port 1-2
62	UP1_3	Inout 4MA, SR PU, SMT	Microcontroller port 1-3
63	UP1_4	Inout 4MA, SR PU, SMT	Microcontroller port 1-4
64	UP1_5	Inout 4MA, SR PU, SMT	Microcontroller port 1-5
65	UP1_6	Inout 4MA, SR PU, SMT	Microcontroller port 1-6
66	DVDD3	Power	3.3V power pin for internal digital circuitry
67	UP1_7	Inout 4MA, SR PU, SMT	Microcontroller port 1-7
68	UP3_0	Inout 4MA, SR PU, SMT	Microcontroller port 3-0
69	UP3_1	Inout 4MA, SR PU, SMT	Microcontroller port 3-1
70	INT0#	Inout 2~16MA, SR PU, SMT	Microcontroller interrupt 0, active low
71	IR	Input SMT	IR control signal input
72	DVDD2	Power	2.5V power pin for internal digital circuitry
73	UP3_4	Inout	Microcontroller port 3-4
74	UP3_5	Inout	Microcontroller port 3-5
75	UWR#	Inout 2~16MA, SR PU, SMT	Microcontroller write strobe, active low
76	URD#	Inout 2~16MA, SR PU, SMT	Microcontroller read strobe, active low
77	DVSS	Ground	Ground pin for internal digital circuitry
78	RD7	Inout	DRAM data 7
79	RD6	Inout	DRAM data 6
80	RD5	Inout	DRAM data 5
81	RD4	Inout	DRAM data 4
82	DVDD2	Power	2.5V power pin for internal digital circuitry
83	RD3	Inout	DRAM data 3
84	RD2	Inout	DRAM data 2
85	RD1	Inout	DRAM data 1
86	RD0	Inout	DRAM data 0
87	RWE#	Output 2~16MA, SR	DRAM Write enable, active low
88	CAS#	Output 2~16MA, SR	DRAM columnaddress strobe, active low
89	RAS#	Output 2~16MA, SR	DRAM row address strobe, active low

Pin No.	Pin name	Type	Function
90	RCS#	Output 2~16MA, SR	DRAM chip select, active low
91	BA0	Output 2~16MA, SR	DRAM bank address 0
92	DVSS	Ground	Ground pin for internal digital circuitry
93	RD15	Inout 2~16MA, SR PU/PD, SMT	DRAM data 15
94	RD14	Inout 2~16MA, SR PU/PD, SMT	DRAM data 14
95	RD13	Inout 2~16MA, SR PU/PD, SMT	DRAM data 13
96	RD12	Inout 2~16MA, SR PU/PD, SMT	DRAM data12
97	DVDD3	Power	3.3V power pin for internal digital circuitry
98	RD11	Inout 2~16MA, SR PU/PD, SMT	DRAM data 11
99	RD10	Inout 2~16MA, SR PU/PD, SMT	DRAM data 10
100	RD9	Inout 2~16MA, SR PU/PD, SMT	DRAM data 9
101	RD8	Inout 2~16MA, SR PU/PD, SMT	DRAM data 8
102	DVSS	Ground	Ground pin for internal digital circuitry
103	CLK	Output 2~16MA, SR	DRAM clock
104	CLE	Output 2~16MA, SR	DRAM clock enable
105	RA11	Output 2~16MA, SR	DRAM address bit 11 or audio serial data 3 (channel 7/8)
106	RA9	Output 2~16MA, SR	DRAM address 9
107	RA8	Output 2~16MA, SR	DRAM address 8
108	DMVDD3	Power	3.3V Power pin for DRAM clock circuitry
109	DMVSS	Ground	Ground pin for DRAM clock circuitry
110	RA7	Output 2~16MA, SR	DRAM address 7
111	DVDD3	Power	3.3V power pin for internal digital circuitry
112	RA6	Output 2~16MA, SR	DRAM address 6
113	RA5	Output 2~16MA, SR	DRAM address 5
114	RA4	Output 2~16MA, SR	DRAM address 4
115	DVSS	Ground	Ground pin for internal digital circuitry
116	DQM1	Output 2~16MA, SR	Mask for DRAM input/output byte 1
117	DQM0	Output 2~16MA, SR	Mask for DRAM input/output byte 0
118	BA1	Output 2~16MA, SR	DRAM bank address 0
119	RA10	Output 2~16MA, SR	DRAM address 10

Pin No.	Pin name	Type	Function
120	DVDD2	Power	2.5V power pin for internal digital circuitry
121	RA0	Output 2~16MA, SR	DRAM address 0
122	RA1	Output 2~16MA, SR	DRAM address 1
123	RA2	Output 2~16MA, SR	DRAm address 2
124	RA3	Output 2~16MA, SR	DRAM address 3
125	DVSS	Ground	Ground pin for internal digital circuitry
126	RD31	Inout 2~16MA, SR PU/PD, SMT	DRAM data 31
127	RD30	Inout 2~16MA, SR PU/PD, SMT'	DRAM data 30
128	RD29	Inout 2~16MA, SR PU/PD, SMT	DRAM data 29
129	RD28	Inout 2~16MA, SR PU/PD, SMT	DRAM data 28
130	DVDD3	Power	3.3V power pin for internal digital circuitry
131	RD27	Inout 2~16MA, SR PU/PD, SMT	DRAM data 27
132	RD26	Inout 2~16MA, SR PU/PD, SMT	DRAM data 26
133	RD25	Inout 2~16MA, SR PU/PD, SMT	DRAM data 25
134	RD24	Inout 2~16MA, SR PU/PD, SMT	DRAM data 24
135	DVSS	Ground	Ground pin for internal digital circuitry
136	DQM3	Output 2~16MA, SR	Mask for DRAM input/output byte 3
137	DQM2	Output 2~16MA, SR	Mask for DRAM input/output byte 2
138	RD23	Inout 2~16MA, SR PU/PD, SMT	DRAM data 23 / Videoin Data PortA 7
139	RD22	Inout 2~16MA, SR PU/PD, SMT	DRAM data 22 / Videoin Data PortA 6
140	DVDD2	Power	2.5V power pin for internal digital circuitry
141	RD21	Inout 2~16MA, SR PU/PD, SMT	DRAM data 21 / Videoin Data PortA 5
142	RD20	Inout 2~16MA, SR PU/PD, SMT	DRAM data 20 / Videoin Data PortA 4
143	RD19	Inout 2~16MA, SR PU/PD, SMT	DRAM data 19 / Videoin Data PortA 3
144	RD18	Inout 2~16MA, SR PU/PD, SMT	DRAM data 18 / Videoin Data PortA 2
145	DVSS	Ground	Ground pin for internal digital circuitry

Pin No.	Pin name	Type	Function
146	RD17	Inout 2~16MA, SR PU/PD, SMT	DRAM data 17 / Videoin Data PortA 1
147	RD16	Inout 2~16MA, SR PU/PD, SMT	DRAM data 16 / Videoin Data PortA 0
148	ABCK	Output 4MA	Audio bit clock
149	ALRCK	Inout 4MA, PD, SMT	(1) Audio left/right channel clock (2) Trap value in power-on reset : 1 : use external 373 0 : use internal 373
150	DVDD3	Power	3.3V power pin for internal digital circuitry
151	ACLK	Inout 4MA	Audio DAC master clock (384/256 audio sample frequency)
152	MC_DATA	Input	Microphone serial input
153	SPDIF	Output 2~16MA, SR : ON/OFF	SPDIF output
154	ASDATA0	Inout 4MA PD SMT	(1) Audio serial data 0 (left/right channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
155	ASDATA1	Inout 4MA PD SMT	(1) Audio serial data 1 (surround left/surround right channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
156	ASDATA2	Inout 4MA PD SMT	(1) Audio serial data 2 (center/left channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
157	ASDATA3	Inout 4MA PD SMT	(1) Audio serial data 3 (surround left/surround right channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation OR Videoin Data PortB 1
158	ASDATA4	Inout 4MA PD SMT	(1) Audio serial data 4 (center/left channel) (2) Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
159	DACVDDC	Power	3.3V power pin for VIDEO DAC circuitry
160	VREF	Analog input	Bandgap reference voltage
161	FS	Analog output	Full scale adjustment
162	YUV0/CIN	Output 4MA, SR	Video data output bit 0 / Compensation capacitor
163	DACVSSC	Ground	Ground pin for VIDEO DAC circuitry
164	YUV1/C	Output 4MA, SR	Video data output bit 1 / Analog chroma output
165	DACVDDB	Power	3.3V power pin for VIDEO DAC circuitry
166	YUV2/Y	Output 4MA, SR	Video data output bit 2 / Analog Y output
167	DACVSSB	Ground	Ground pin for VIDEO DAC circuitry
168	YUV3/CVBS	Output 4MA, SR	Video data output bit 3 / Analog composite output
169	DACVDDA	Power	3.3V power pin for VIDEO DAC circuitry
170	YUV4/G	Output 4MA, SR	Video data output bit 4 / Green or Y
171	DACVSSA	Ground	Ground pin for VIDEO DAC circuitry
172	YUV5/B	Output 4MA, SR	Video data output bit 5 / Blue or CB
173	YUV6/R	Output 4MA, SR	Video data output bit 6 / Red or CR
174	ICE	Input PD, SMT	Microcontroller ICE mode enable
175	BLAN#	Inout 4MA, SR SMT	Video blank area, active low / Videoin Field_601

Pin No.	Pin name	Type	Function
176	VSYN	Inout 4MA, SR SMT	Vertical sync / Videoin Vsync_601
177	YUV7	Inout 4MA, SR SMT	Video data output bit 7 / Videoin Data PortB 3
178	DVSS	Ground	Ground pin for internal digital circuitry
179	HSYN	Inout 4MA, SR SMT	Horizontal sync / Videoin Hsync_601
180	SPMCLK	Input	Audio DAC master clock of SPDIF input / Videoin Data PortB 4
181	SPDATA	Input	Audio data of SPDIF input / Videoin Data PortB 5
182	DVDD2	Power	2.5V power pin for internal digital circuitry
183	SPLRCK	Input	Audio left/right channel clock of SPDIF input / Videoin Data PortB 6
184	SPBCK	Input	Audio bit clock of SPDIF input/ Videoin Data PortB 7
185	DVDD3	Power	3.3V power pin for internal digital circuitry
186	XTALO	Output	Crystal output
187	XTALI	Input	Crystal input
188	PRST	Input PD, SMT	Power on reset input, active high
189	DVSS	Ground	Ground pin for internal digital circuitry
190	VFO13	Output	The 1st, 3rd header VFO pulse output
191	IDGATE	Output	Header detect signal output
192	DVDD3	Power	3.3V power pin for internal digital circuitry
193	UDGATE	Output	DVD-RAM recording data gate signal output
194	WOBSI	Input	Wobble signal input
195	SDATA	Output	RF serial data output
196	SDEN	Output	RF serial data latch enable
197	SLCK	Output	RF serial clock output
198	BDO	Input	Flag of defect data input status
199	ADCVSS	Ground	Ground pin for ADC circuitry
200	ADIN	Analog Input	General A/D input
201	RFSUBI	Analog Input	RF subtraction signal input terminal
202	TEZISLV	Analog Input	Tracking error zero crossing low pass input
203	TEI	Analog Input	Tracking error input
204	CSO	Analog Input	Central servo input
205	FEI	Analog Input	Focus error input
206	RFLEVEL	Analog Input	Sub beam add input or RFRP low pass input
207	RFRP_DC	A Input	RF ripple detect input
208	RFRP_AC	Analog Input	RF ripple detect input (through AC coupling)
209	HRFZC	Analog Input	High frequency RF ripple zero crossing
210	PWMVREF	A Input	A reference voltage input for PWM circuitry. A typical value of 4.0 v
211	PWM2VREF	A Input	A reference voltage input for PWM circuitry. A typical value of 2.0 v
212	ADCVDD3	Power	3.3V power pin for ADC circuitry
213	RFDTSLVP	Analog Output	Positive RF data slicer level output
214	RFDTSLVN	Analog Output	Negative RF data slicer level output
215	RFIN	Analog Input	Negative input of RF differential signal
216	RFIP	Analog Input	Positive input of RF differential signal

MEMO

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Mirror Time and IOP measurement allows you to make diagnosis and adjustment simply by using the remote commander and monitor TV. The instructions, diagnosis results, etc. are given on the on screen display (OSD).

The Mirror Time and IOP measurement is required is such events where servicing a DVD-Player includes changing the Base Unit (BU). For each new BU to be used with a certain MV-044 board, Mirror Time and IOP measurement need to be carried out.

6-2. STARTING TEST MODE

Press the [TOP MENU], [CLEAR], [POWER] keys on the remote commander in this order with the DVD player in standby mode. The Test Mode starts, then the menu shown below will be displayed on the TV screen.

```
        Remocon Diagnosis Menu

0. External Chip Check
1. Servo Parameter Check
2. Drive Manual Operation
3. Emergency History
4. Version Information
5. Video Level Adjustment

Model Name : DPX-xxxx_xx
IF-con     : Ver. x.xxx (xxxx)
Syscon     : Ver. x.xxx
```

The menu above is the Remocon Diagnosis Menu screen which consists of six main function. At the bottom of the menu screen, the model name and IF-con version. To enter Mirror Time Adjustment menu, press button [2] on the remote commander to enter Drive Manual Operation menu. To exit from the Test Mode, press the power button on the remote commander.

6-3. DRIVE MANUAL OPERATION

The Drive Manual Operation menu consists of five main function. By pressing [2] on the remote commander in the Remocon Diagnosis Menu, the screen will appear as below.

```
        Drive Manual Operation

1. Servo Control
2. Track/Layer Jump
3. Manual Adjustment
4. Tray Aging Mode
5. MIRR time Adjust
0. Return to Top Menu
```

6-4. MIRROR TIME ADJUSTMENT

To enter Mirror Time Adjustment, press [5] on the remote commander. The screen will appear as below.

```
        MIRR time Adjust Menu

1. CD MIRR time Check:
2. DVD MIRR time Check:
3. Threshold:
4. Save to EEPROM
5. Default set MIRR time

[Open] Tray open [Close] Tray close
[0] Return to previous menu
```

There are five main commands in the Mirr time Adjust menu as shown in the figure above. The functions of each command are described in the following page.

1. CD Mirr time Check
This command checks the Mirror time value for CD disc.

2. DVD Mirr time Check
This command checks the Mirror time value for DVD disc.

3. Threshold
This command displays the threshold value between CD and DVD mirror time.

4. Save to EEPROM
This command saves an adjusted mirror time value to the EEPROM.

5. Default set MIRR time
This command will set CD and DVD mirror time to firmware default value.

[Open] / [Close]
Pressing the Open / Close button controls the tray for disc change during mirror time adjustment.

[0] Return to previous menu
Press [0] button to return to previous menu.

6-4-1. EXECUTING MIRROR TIME ADJUSTMENT

In order to execute mirror time adjustment, the following standard procedures must be followed.

(1) In standby mode, press [TOP MENU], [CLEAR], [POWER] to enter Remocon Diagnosis Mode.

(2) Select “2. Drive Manual Operation”.

```
        Remocon Diagnosis Menu

0. External Chip Check
1. Servo Parameter Check
2. Drive Manual Operation
3. Emergency History
4. Version information
5. Video Level Adjustment

Model      : DPX-xxxx_xx
IF-con     : Ver. x.xxx (xxxx)
Syscon     : Ver. x.xxx
```

(3) Select “5. MIRR time Adjust”.

```
Drive Manual Operation

1. Servo Control
2. Track/Layer Jump
3. Manual Adjustment
4. Tray Aging Mode
5. MIRR time Adjust
0. Return to Top Menu
```

(4) Select “5. Default set MIRR time”.

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check:
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [Close] tray close
[0] Return to previous menu
```

(5) Select “3. Threshold”.

(6) Confirm the number. If it is 75, go to next step. If it is any other value, return to step 4.

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check:
3. Threshold:(75) ←
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [Close] tray close
[0] Return to previous menu
```

(7) Push “Open/Close” key to eject tray.

(8) Insert Test Disc HLX-504 into tray.

(9) Push “Open/Close” key to close tray.

(10) Push “2. DVD MIRR time Check”.

(11) Wait for HEX number to display.

(12) Confirm the number, if XX is 28 ~ 70, proceed with next step. If no, return to 7.

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check: XX (XX) ↙
3. Thereshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] tray open [close] tray close
[0] Return to previous menu
```

(13) Push “4. Save to EEPROM”.

(14) Confirm the same values are displayed. If it is not same, return to step 7.

```
MIRR time adjustment Menu

1. CD MIRR time Check:
2. DVD MIRR time Check: (XX XX) ↙
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [close] tray close
[0] Return to previous menu
```

(15) Push “Open/Close” key to eject tray.

(16) Take out HLX-504 and insert Test Disc YEDS-18 into tray.

(17) Push “Open/Close” key to close tray.

(18) Push “1. CD MIRR time check”.

(19) Wait for HEX number to display.

(20) Confirm the number, if YY is 5A ~ E8, proceed with next step. If no, return to 15.

```
MIRR time adjustment Menu

1. CD MIRR time Check: yy (YY) ↙
2. DVD MIRR time Check: XX XX
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [close] tray close
[0] Return to previous menu
```

(21) Push “4. Save to EEPROM”.

(22) Confirm the same values are displayed. If it is not the same, return to step 15.

```
MIRR time adjustment Menu

1. CD MIRR time check: (YY YY) ↙
2. DVD MIRR time check: XX XX
3. Threshold:
4. Save to EEPROM:
5. Default set MIRR time:

[Open] Tray open [close] tray close
[0] Return to previous menu
```

(23) Push “Open/Close” key to eject tray.

(24) Remove Test Disc YEDS-18 from tray.

(25) Push “Open/Close” key to close tray.

(26) Press “0” to return to the Drive Manual Operation menu.

(27) Press “0” to return to the Remocon Diagnosis Menu.

(28) Press power button to switch OFF set.

6-5. EXECUTING IOP MEASUREMENT

In order to execute mirror time adjustment, the following standard procedures must be followed.

(1) In standby mode, press [TOP MENU], [CLEAR], [POWER] to enter Remocon Diagnosis Mode.

```
        Remocon Diagnosis Menu

0. External Chip Check
1. Servo Parameter Check
2. Drive Manual Operation
3. Emergency History
4. Version information
5. Video Level Adjustment

Model        : DPX-1790_UC2
IF-con  Ver  : 1.000 (5B84)
Syscon  Ver  : 1.81
```

(2) Select "2. Drive Manual Operation" by pressing the [2] key on the remote commander. The screen will appear as below.

```
        Drive Manual Operation

1. Servo Control
2. Track/Layer Jump
3. Manual Adjustment
4. Tray Aging Mode
5. MIRR time adjust
0. Return to top Menu
```

(3) Select "3. Manual Adjustment" by pressing the [3] key on the remote commander. The screen will appear as below.

```
        Manual Adjust

1. Track Balance Adjust:
2. Track Gain Adjust:
3. Focus Balance Adjust:
4. Focus Gain Adjust:
5. Eq boost Adjust:
6. Iop:
7. TRV. Level:
8. S curve(FE) Level:
9. RFL(PI) Level:
0. MIRR Time:

[↑] [↓] Change Value
[RETURN] Return to previous menu
```

(4) Select Iop by pressing [6] key on the remote commander.

(5) Wait until a hexadecimal number appear.

```
        Manual Adjust

1. Track Balance Adjust:
2. Track Gain Adjust:
3. Focus Balance Adjust:
4. Focus Gain Adjust:
5. Eq Boost Adjust:
6. Iop:(ED;)
7. TRV. Level:
8. S curve(FE) Level:
9. RFL(PI) Level:
0. MIRR Time:

Change Value
[0] Return to previous menu
```

(6) Convert data from hexadecimal to decimal using conversion table.

(7) Press [RETURN] to return back to previous menu.

(8) Press 0 to return to Top Menu and power OFF the DVD Player.

6-6. IF CON SELF DIAGNOSTIC FUNCTION

1. IF-113 BOARD (IF CON) TEXT MODE

The IF-113 board (IF CON) test mode is the IF CON self-diagnosis mode. THe IF CON can diagnose the functions of the IF-113 board that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Fluorescent display tube lighting check
   - Grid check
   - Anode check
5. LED control function

In the test mode, the main unit operates same as usual, except voltage monitoring, communication, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3V (PCONT) of MV-044 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The main unit is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube.
   (Normally, display is mode following the commands from SYSTEM CONTROL).
4. LED control.
   (Normally, control is mode made following the commands from SYSTEM CONTROL).

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

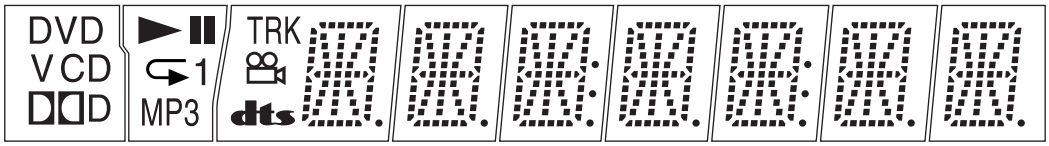
2-1. Self Check Mode Transition Processing

At the AC Power ON after reset of IF CON is released, while pressing with the MV-044 board are not connected to the IF-113 board, or while pressing the ■ key on the main unit with the IF CON in STANDBY mode, enter [RETURN] → [DISPLAY] (or [SETUP]) on the remote commander, and the main unit transits to the Self Check Mode.

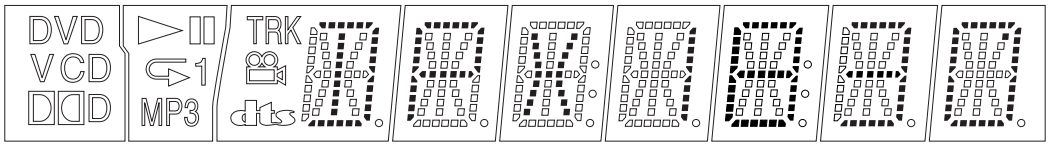
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

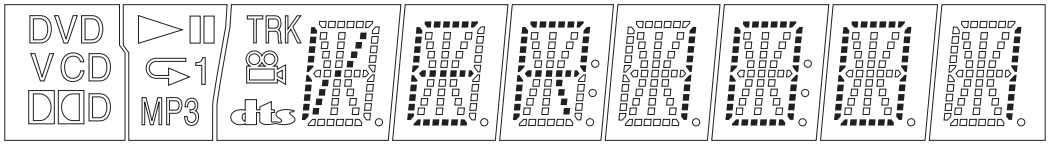
(1) FLD and LED all ON (for 5 seconds)



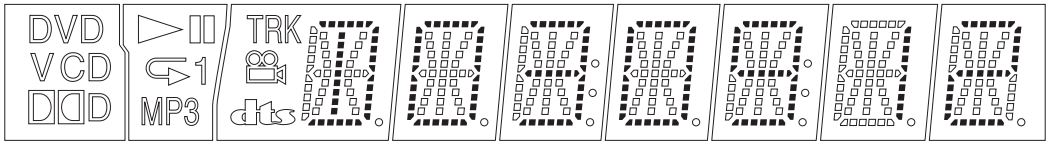
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)				
	PIN ㉞ (AD1)	PIN ㉟ (O/C)	PIN ㊱ (STOP)	PIN ㊲	PIN ㊳
0 - 0.20	PLAY	OPEN/CLOSE	STOP	POWER	SHARP
0.60 - 0.82	PAUSE	-	-	-	NATURAL
1.16 - 1.47	PREVIOUS	-	-	-	FLAT
1.80 - 2.12	NEXT	-	-	-	
2.48 - 2.70	-	-	-	-	

2-3-1. FLD and LED All ON

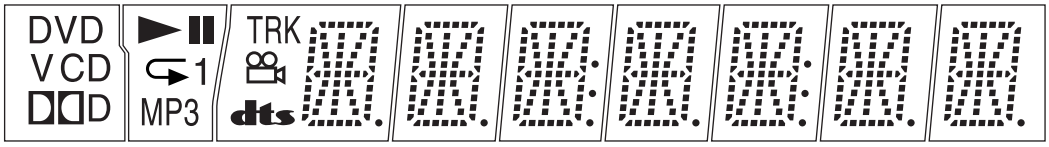
2-3-1-1. Transition Keys in Self Check Mode

- ⏏ key and ■ key on the main unit
- ← key on the remote commander

2-3-1-2. Operation and display

In this mode, all LEDs and all segments of FLD turn ON.

• Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

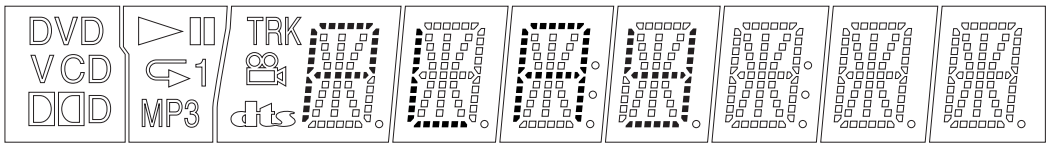
2-3-2-1. Transition Keys in Self Check Mode

- Keys on the main unit except keys transited in Self Check Mode

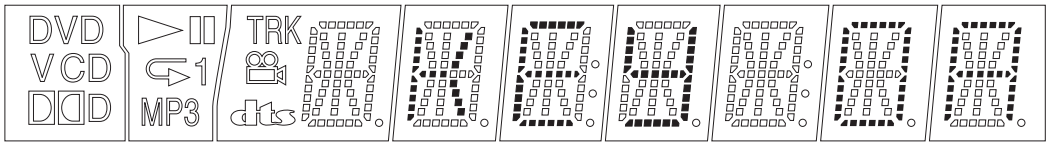
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Aslo, the key name display and the key code display can be switched with the DISPLAY key on the remote commander, “NOTHING” is displayed when nothing is entered. Also, DVD, V, CD segments turn on when a communication error occurred.

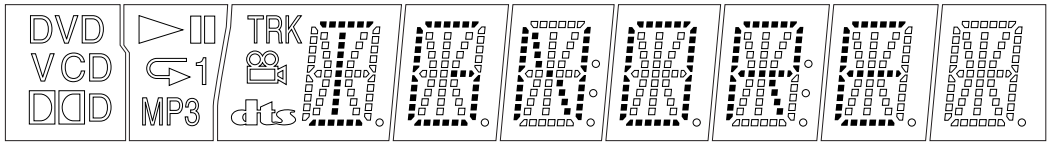
• FLD display (at input of ▷ key on the main unit)



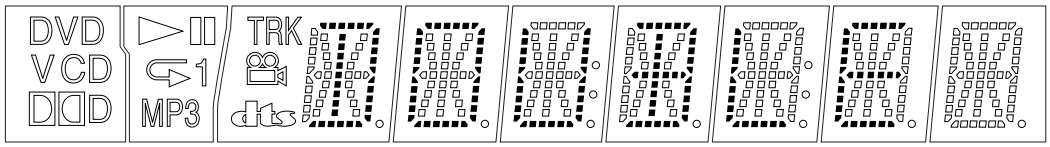
• **Key code display**
(at input of [▷] key, key code: 0Ah)



• **At input of faulty voltage**



• **When key is pressed double**



2-3-3. Remote Commander Key Name Display and Key Code Display

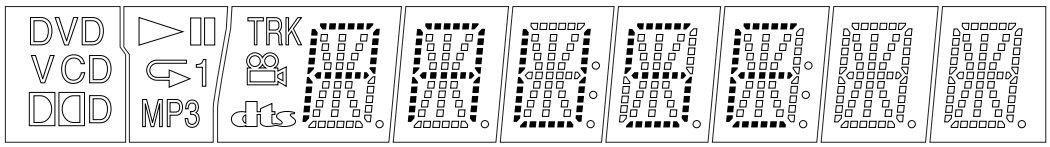
2-3-3-1. Transition Keys in Self Check Mode

• Remote commander keys except keys transited in Self Check Mode

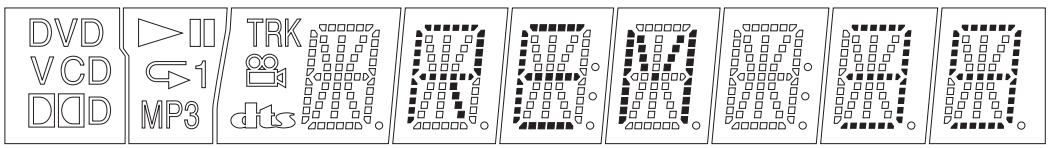
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check Mode, the name of that key is displayed on the FLD. Aslo, the key name display and the key code display can be switched with the [DISPLAY] key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

• **Remote commander key name display (at input of [❚❚] key)**



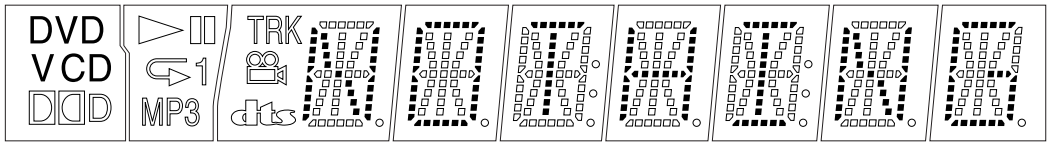
• **Remote commander key code display**
(at input of [❚❚] key, key code:39h)



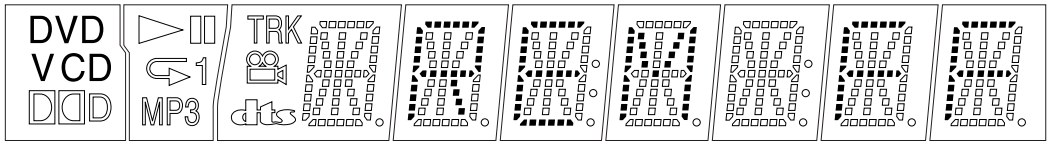
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed.
When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

- **Communication error display (at no input of key and remote commander)**



- **Communication error display (at code display without input of the remote commander)**



2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

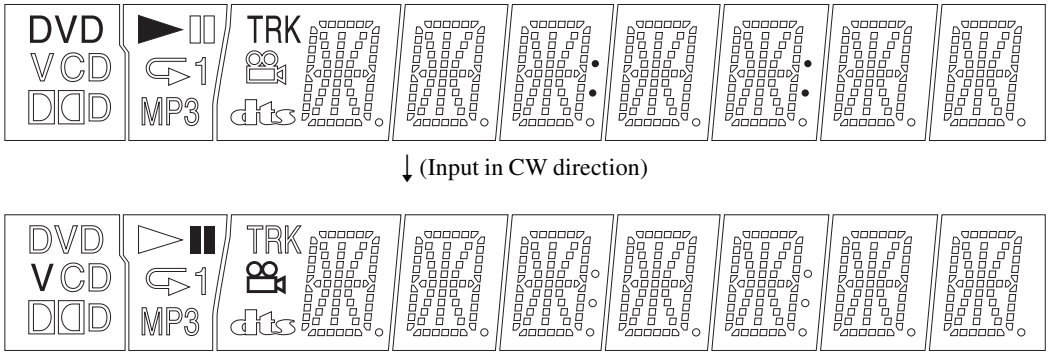
2-3-5-1. Transition Keys in Self Check Mode

- [→] key on the remote commander
- SHUTTLE on the remote commander during Anode Test display (This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-5-2. Operation and Display

The Self Check Mode transits to this mode when [→] key is entered. This tests whether each segment turns on individually. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid switched in order. When SHUTTLE input is clockwise, the segment switches in 1 - 2 -3 direction, or counterclockwise it switches in 3 - 2- 1 direction.

- **Display at the start of Anode Test**



2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

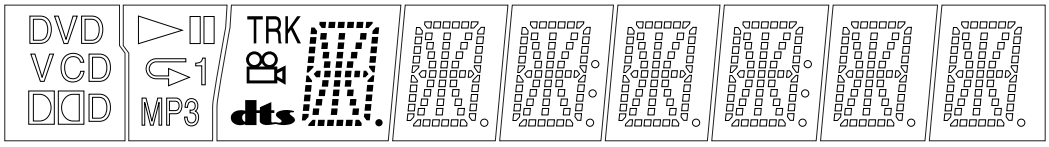
2-3-6-1. Transition Keys in Self Check Mode

- [↑] key on the remote commander
- SHUTTLE on the remote commander during Grid Test display (This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

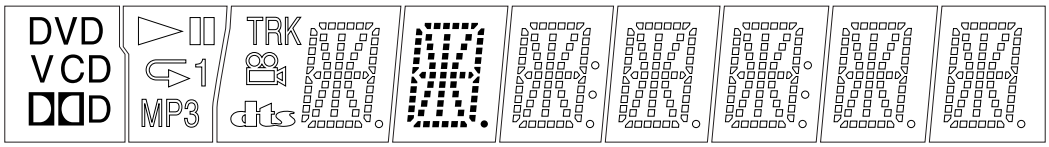
2-3-6-2. Operation and Display

The Self Check Mode transits to this mode when [↑] key is entered. This tests whether each grid turns on individually. The first grid only of FLD turns on and other grid turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switched in 1 - 2 - 3 direction, or counterclockwise it switches in 3 - 2 - 1 direction.

- **Display at the start of Grid Test**



↓ (Input in CW direction)



2-3-7. LED Test Display

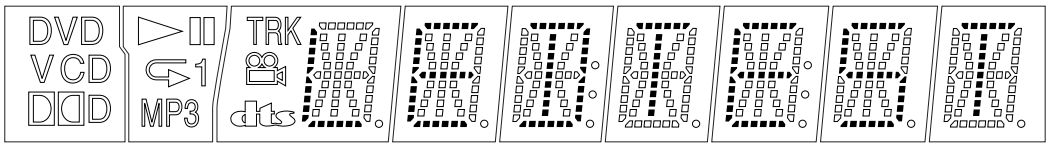
2-3-7-1. Transition Keys in Self Check Mode

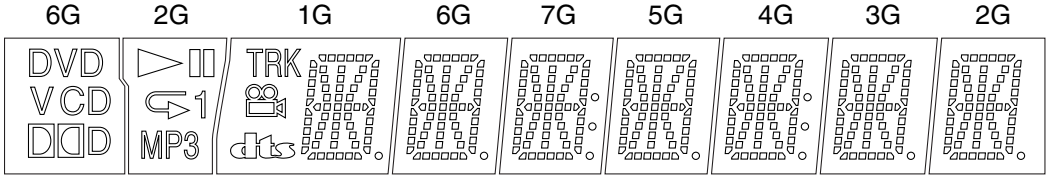
- [↓] key on the remote commander
- SHUTTLE on the remote commander during Grid Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

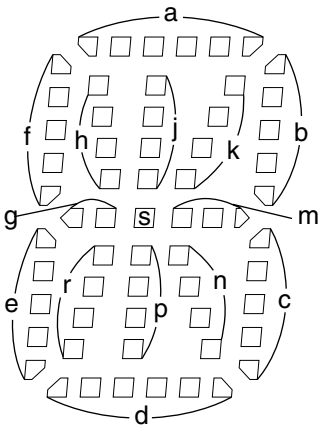
2-3-7-2. Operation and Display

LED is switched in order by the input JOG/SHUTTLE on the remote commander. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED conncerned.

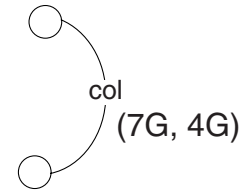
- **FLD display during LED Test**







(7G~1G)



(7G, 4G)

(7G~3G, 1G)

ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	col	DVD	-	col	-	▷	TRK
P2	-	V	-	-	-	II	
P3	-	CD	-	-	-	↩	dts
P4	-	DDD	-	-	-	1	-
P5	Dp	Dp	Dp	Dp	Dp	MP3	Dp
P6	a	a	a	a	a	a	a
P7	k	k	k	k	k	k	k
P8	j	j	j	j	j	j	j
P9	h	h	h	h	h	h	h
P10	b	b	b	b	b	b	b
P11	f	f	f	f	f	f	f
P12	m	m	m	m	m	m	m
P13	s	s	s	s	s	s	s
P14	g	g	g	g	g	g	g
P15	c	c	c	c	c	c	c
P16	d	d	d	d	d	d	d
P17	r	r	r	r	r	r	r
P18	p	p	p	p	p	p	p
P19	n	n	n	n	n	n	n
P20	e	e	e	e	e	e	e

SECTION 7
ELECTRICAL ADJUSTMENT

This section describes procedures and instructions necessary for adjusting electrical circuits in this unit.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D126J)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer) (NTSC)
   HLX-503 (J-6090-069-A) (single layer) (NTSC)
   HLX-504 (J-6090-088-A) (single layer) (NTSC)
   HLX-505 (J-6090-089-A) (dual layer) (NTSC)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
8) Extention Cable (J-6090-107-A)

7-1. POWER SUPPLY ADJUSTMENT

Mode	E-E
Instrument	Digital voltmeter
EVER +5.0 V Check	
Test point	CN201 pin ④
Specification	5.0 ± 0.3 Vdc
SW +3.5 V Check	
Test point	CN201 pin ⑤
Specification	3.35 ± 0.2 Vdc
SW+5 V Check	
Test point	CN201 pin ⑥
Specification	5.0 ± 0.3 Vdc
SW +8 V Check	
Test point	CN201 pin ①
Specification	8.0 ± 0.5 Vdc
EVER +11 V Check	
Test point	CN201 pin ③
Specification	11.0 + 1.0/–0.5 Vdc
EVER –10.0 V Check	
Test point	CN201 pin ⑩
Specification	–10.0 + 0.5/–1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

Note
Because the heatsink installed on the power supply board is a part of the primary side, never touch it to avoid electrical shock.

Abbreviation

BR : Brazilian model
SP : Singapore model
: Malaysia model
: Thailand model
: Vietnam model
: Philippine model
: Indonesia model
EA : Saudi Arabia model
CH : Chinese model

MEMO

SECTION 8
REPAIR PARTS LIST

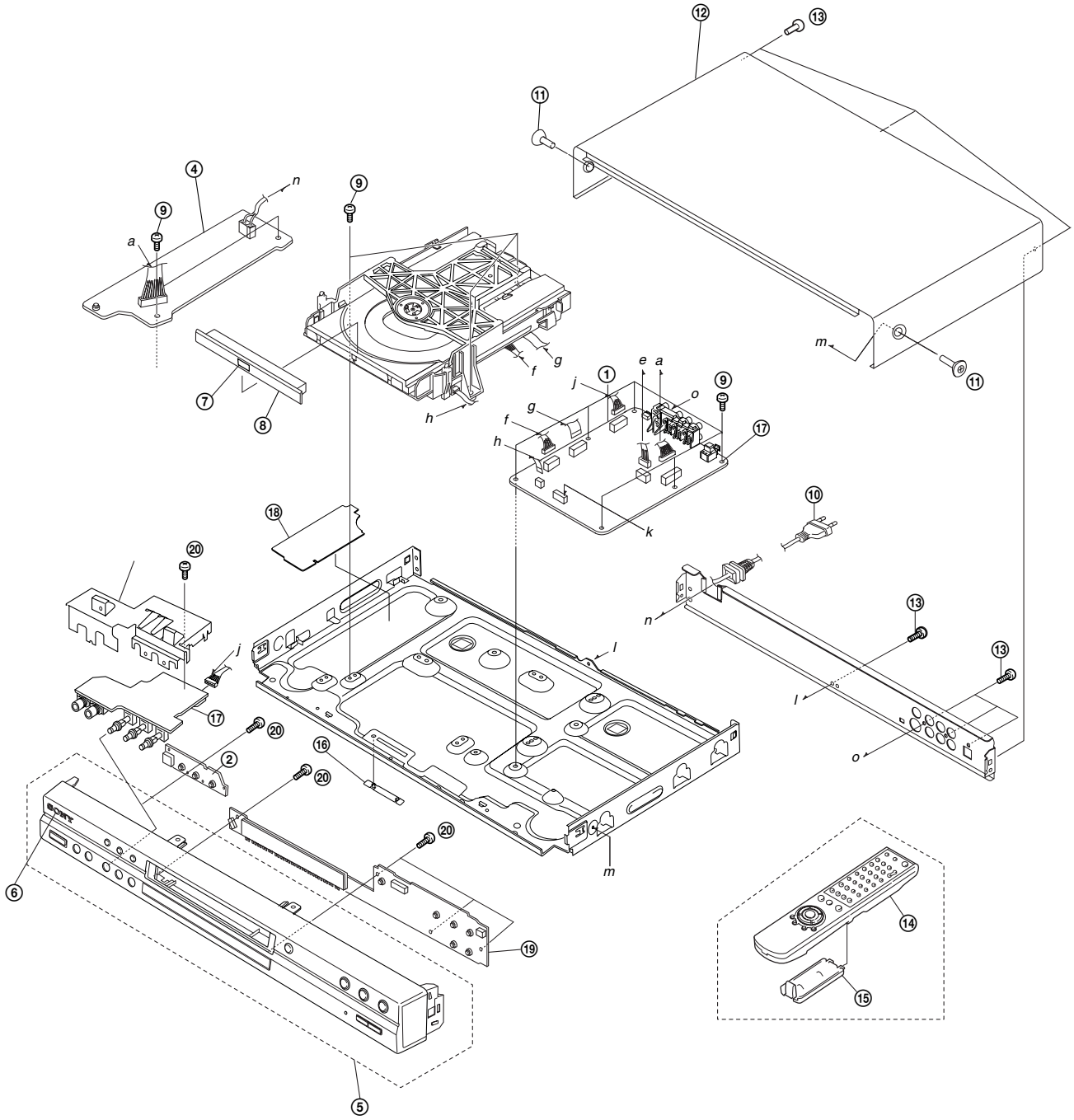
8-1. EXPLODED VIEWS

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color
- Abbreviation
  BR : Brazilian model
  SP : Singapore model
  : Malaysia model
  : Thailand model
  : Vietnam model
  : Philippine model
  : Indonesia model
  EA : Saudi Arabia model
  CH : Chinese model

8-1-1. MAIN SECTION

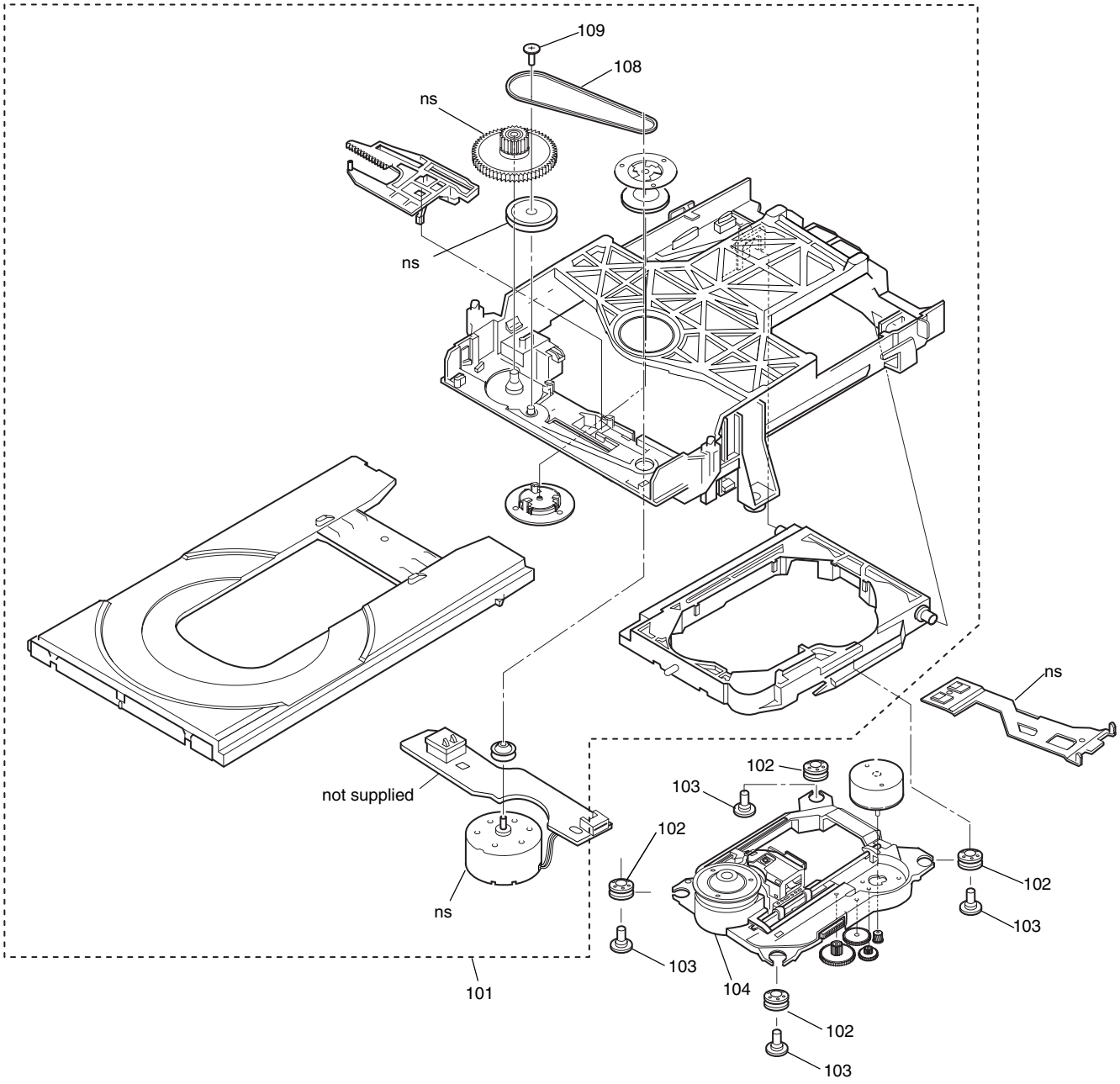


Ref. No.	Part No.	Description	Remark
1	A-1054-243-A	MV-044 COMPL (K880P:SP/K870P:SP)	
1	A-1062-856-A	MV-044 COMPL (K870P:EA)	
1	A-1062-882-A	MV-044 COMPL(K870P:BR)	
1	A-1063-400-A	MV-044 COMPL(K880P:CH)	
⚠4	1-478-539-11	POWER BLOCK	
5	X-2021-464-1	PANEL ASSY, FRONT (K870P:SP)	(SILVER)
5	X-2021-128-1	PANEL ASSY, FRONT (K880P:SP)	(GOLD)
6	3-066-225-11	SONY BADGE (5-A) (K870P:SP)	
6	3-066-225-21	SONY BADGE (5-A) (K880P:SP)	
7	3-088-342-21	EMBLEM (V), DVD (K880P:SP)	
8	X-2021-642-1	COVER ASSY, TRAY (K870P:SP)	
8	X-2021-129-1	COVER ASSY, TRAY (K880P:SP)	
9	3-077-331-21	SUMITITE (B3), +BV	
⚠10	1-828-454-11	CORD, POWER (K870P:EA)	
⚠10	1-828-450-11	CORD, POWER (K880P:SP)	
⚠10	1-828-846-11	CORD, POWER (K870P:EA)	
⚠10	1-828-455-11	CORD, POWER (K880P:SP)	
11	3-070-883-41	SCREW, TAPPING	
12	3-091-752-11	CASE, UPPER (K870P:SP)	
12	3-091-752-01	CASE, UPPER (K880P:SP)	
13	3-077-331-11	SUMITITE +BV3 (3-CR)	
14	1-478-675-31	REMOTE COMMANDER (RMT-D170P) (K870P:SP,EA/K880P:CH)	(SILVER)
14	1-478-675-21	REMOTE COMMANDER (RMT-D169P) (K880P:SP,CH)	(GOLD)
14	1-478-675-11	REMOTE COMMANDER (RMT-D169A) (K870P:BR)	
15	3-073-096-21	LID, BATTERY CASE (K870P:SP, BR)	
15	3-073-096-01	LID, BATTERY CASE (K880P:SP)	
16	3-080-900-01	COVER, DUST	
18	3-088-489-01	PS INSULATOR	
20	3-087-053-01	SUMITITE (B3), +BV	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

8-1-2. MECHANISM DECK ASSEMBLY

ns : not supplied



Ref. No.	Part No.	Description	Remark
101	A-1054-450-A	LOADING ASSY (J8.5G)	
102	3-088-372-01	INSULATOR	
103	3-087-599-01	INSULATOR SCREW	
⚠104	8-820-237-06	DEVICE, OPTICAL KHM-310AAA/C2RP	
108	3-088-371-01	BELT	
109	4-674-137-11	SCREW (2x5)(P TYIGHT), (+)PTTWH	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (HS12S2U) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation
  BR : Brazilian model
  SP : Singapore model
  : Malaysia model
  : Thailand model
  : Vietnam model
  : Philippine model
  : Indonesia model
  EA : Saudi Arabia model
  CH : Chinese model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
		CK-139 BOARD COMPLETE			
		**********			
		<CONNECTOR>			
CN301	1-568-943-11	PIN, CONNECTOR 5P			
		<DIODE>			
D301	8-719-070-75	DIODE SLR-342DCT32			
D302	8-719-070-74	DIODE SLR-342DCT32			
D303	8-719-070-75	DIODE SLR-342DCT32			
		<RESISTOR>			
R301	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R302	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R303	1-216-025-91	RES-CHIP	56	5%	1/10W
R304	1-216-025-91	RES-CHIP	56	5%	1/10W
R305	1-216-025-91	RES-CHIP	56	5%	1/10W
		<SWITCH>			
S301	1-762-875-21	SWITCH, KEYBOARD			
S302	1-762-875-21	SWITCH, KEYBOARD			
S303	1-762-875-21	SWITCH, KEYBOARD			
		IF-113 BOARD COMPLETE			
		**********			
		<CAPACITOR>			
C401	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C403	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C404	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C405	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C406	1-162-964-11	CERAMIC CHIP	0.001UF	10.00% 50V	
C407	1-126-204-11	ELECT CHIP	47UF	20.00% 16V	
C408	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C409	1-117-681-31	ELECT CHIP	100UF	20.00% 16V	
C410	1-130-481-00	MYLAR	0.0068UF	5.00% 50V	
C411	1-115-339-11	CERAMIC CHIP	0.1UF	10.00% 50V	
C412	1-126-202-31	ELECT CHIP	22UF	20.00% 35V	
C413	1-115-339-11	CERAMIC CHIP	0.1UF	10.00% 50V	
C416	1-117-681-31	ELECT CHIP	100UF	20.00% 16V	
C491	1-162-927-11	CERAMIC CHIP	100PF	5.00% 50V	
		<CONNECTOR>			
CN401	1-568-942-11	PIN, CONNECTOR 4P			
CN402	1-818-172-11	CONNECTOR, FPC/FFC 13P			
CN403	1-962-803-11	HARNESS IK-052			
		<DIODE>			
D401	8-719-056-06	DIODE SLR-342DC3F			
D402	8-719-041-97	DIODE MA113-(TX)			
D403	8-719-041-97	DIODE MA113-(TX)			
D404	8-719-041-97	DIODE MA113-(TX)			
D405	8-719-041-97	DIODE MA113-(TX)			
D406	8-719-421-82	DIODE MA8043-M(TX)			
		<IC>			
IC404	6-804-087-01	IC TMP86CK74AFG-5C00(M)			
IC406	6-703-744-01	IC GP1UE26SXKOF			
IC408	6-704-114-01	IC S-80828CNUA-B8NT2G			
		<JACK>			
JS403	1-216-295-00	SHORT CHIP	0		
		<INDUCTOR>			
L401	1-456-708-21	INDUCTOR	0UH		

IF-113 **MC-147**

Ref. No.	Part No.	Description			Remark
		<FLUORASCENT>			
ND401	1-518-984-12	VACUUM FLUORASCENT DISPLAY			
		<TRANSISTOR>			
Q401	8-729-056-46	TRANSISTOR 2SC5053T100Q			
Q402	8-729-056-46	TRANSISTOR 2SC5053T100Q			
Q403	8-729-421-20	TRANSISTOR UN2211-TX			
Q404	8-729-421-20	TRANSISTOR UN2211-TX			
Q405	8-729-421-20	TRANSISTOR UN2211-TX			
Q406	8-729-424-11	TRANSISTOR UN2111-TX			
Q407	8-729-424-11	TRANSISTOR UN2111-TX			
Q408	8-729-424-11	TRANSISTOR UN2111-TX			
		<RESISTOR>			
R401	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R402	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R403	1-216-025-11	RES-CHIP	100	5% 1/10W	
R404	1-216-025-11	RES-CHIP	100	5% 1/10W	
R405	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R406	1-216-025-11	RES-CHIP	100	5% 1/10W	
R407	1-216-025-11	RES-CHIP	100	5% 1/10W	
R408	1-216-025-11	RES-CHIP	100	5% 1/10W	
R409	1-216-025-11	RES-CHIP	100	5% 1/10W	
R411	1-216-025-11	RES-CHIP	100	5% 1/10W	
R412	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R414	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R416	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R417	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R418	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R419	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R420	1-216-027-00	RES-CHIP	120	5% 1/10W	
R421	1-216-013-00	RES-CHIP	33	5% 1/10W	
R422	1-216-097-11	RES-CHIP	100K	5% 1/10W	
R423	1-216-065-91	RES-CHIP	4.7K	5% 1/10W	
R424	1-216-017-91	RES-CHIP	47	5% 1/10W	
R426	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R427	1-216-083-00	RES-CHIP	27K	5% 1/10W	
R429	1-216-071-00	RES-CHIP	8.2K	5% 1/10W	
R430	1-216-063-91	RES-CHIP	3.9K	5% 1/10W	
R431	1-216-059-00	RES-CHIP	2.7K	5% 1/10W	
R432	1-216-021-00	RES-CHIP	68	5% 1/10W	
R433	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R434	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R435	1-216-073-91	RES-CHIP	10K	5% 1/10W	
R436	1-216-065-91	RES-CHIP (K870P: SP/K880P: SP)	4.7K	5% 1/10W	
R436	1-216-057-91	RES-CHIP (K870P: EA)	2.2K	5% 1/10W	
R436	1-216-073-91	RES-CHIP (K870P: BR)	10K	5% 1/10W	
R437	1-216-073-91	RES-CHIP (K870P: SP/K880P: SP)	10K	5% 1/10W	
R437	1-216-057-91	RES-CHIP (K870P: BR)	2.2K	5% 1/10W	
R440	1-216-864-11	SHORT CHIP	0		

Ref. No.	Part No.	Description	Remark
		<SWITCH>	
S401	1-771-874-11	SWITCH, KEYBOARD	
S402	1-771-874-11	SWITCH, KEYBOARD	
S403	1-771-874-11	SWITCH, KEYBOARD	
S404	1-771-874-11	SWITCH, KEYBOARD	
S405	1-771-874-11	SWITCH, KEYBOARD	
S407	1-771-874-11	SWITCH, KEYBOARD	
		<TRANSFORMER>	
T401	1-443-199-11	DC-DC CONVERTER TRANSFORMER	
		<VIBRATOR>	
X401	1-781-472-21	VIBRATOR, CERAMIC	

MC-147 COMPLETE
****

		<CAPACITOR>			
C501	1-115-416-11	CERAMIC CHIP	0.001UF	5.00%	25V
C502	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C503	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C504	1-115-416-11	CERAMIC CHIP	0.001UF	5.00%	25V
C505	1-124-255-91	ELECT	1UF	20.00%	50V
	1-126-160-11	ELECT	1UF	20.00%	50V
C506	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C507	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C508	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C509	1-124-236-91	ELECT	47UF	20.00%	16V
C510	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C511	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C512	1-124-257-00	ELECT	2.2UF	20.00%	50V
C513	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C514	1-124-257-00	ELECT	2.2UF	20.00%	50V
C515	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C516	1-124-236-91	ELECT	47UF	20.00%	16V
C517	1-115-416-11	CERAMIC CHIP	0.001UF	5.00%	25V
C518	1-124-259-91	ELECT	4.7UF	20.00%	50V
C519	1-164-390-91	CERAMIC CHIP	330PF	5.00%	50V
C520	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C522	1-124-257-00	ELECT	2.2UF	20.00%	50V
C523	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C524	1-115-416-11	CERAMIC CHIP	0.001UF	5.00%	25V
C525	1-164-390-91	CERAMIC CHIP	330PF	5.00%	50V
C526	1-124-259-91	ELECT	4.7UF	20.00%	50V
C528	1-124-257-00	ELECT	2.2UF	20.00%	50V
C529	1-115-416-11	CERAMIC CHIP	0.001UF	5.00%	25V
C530	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C531	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C532	1-128-131-11	ELECT	22UF	20.00%	50V
C533	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C534	1-163-019-00	CERAMIC CHIP	0.0068UF	10.00%	50V

Ref. No.	Part No.	Description			Remark
C535	1-164-343-11	CERAMIC CHIP	0.056UF	10.00% 25V	
C536	1-163-009-11	CERAMIC CHIP	0.001UF	10.00% 50V	
C537	1-164-344-11	CERAMIC CHIP	0.068UF	10.00% 25V	
C538	1-124-236-91	ELECT	47UF	20.00% 16V	
C539	1-128-131-11	ELECT	22UF	20.00% 50V	
C540	1-164-004-11	CERAMIC CHIP	0.1UF	10.00% 25V	
C541	1-115-340-11	CERAMIC CHIP	0.22UF	10.00% 25V	
C542	1-115-340-11	CERAMIC CHIP	0.22UF	10.00% 25V	
C543	1-164-344-11	CERAMIC CHIP	0.068UF	10.00% 25V	
C544	1-124-236-91	ELECT	47UF	20.00% 16V	
C545	1-164-004-11	CERAMIC CHIP	0.1UF	10.00% 25V	
C546	1-163-013-91	CERAMIC CHIP	0.0022UF	10.00% 50V	
C547	1-163-019-00	CERAMIC CHIP	0.0068UF	10.00% 50V	
C548	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C549	1-115-416-11	CERAMIC CHIP	0.001UF	5.00% 25V	
C550	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C551	1-115-416-11	CERAMIC CHIP	0.001UF	5.00% 25V	
C553	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C554	1-115-416-11	CERAMIC CHIP	0.001UF	5.00% 25V	
C555	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C556	1-115-416-11	CERAMIC CHIP	0.001UF	5.00% 25V	
C557	1-124-259-91	ELECT	4.7UF	20.00% 50V	
C558	1-128-131-11	ELECT	22UF	20.00% 50V	
		<CONNECTOR>			
CN501	1-568-944-11	PIN,CONNECTOR 6P			
		<DIODE>			
D501	8-719-056-85	DIODE UDZ-TE-17-8.2B			
D502	8-719-056-85	DIODE UDZ-TE-17-8.2B			
D503	8-719-800-76	DIODE 1SS226			
		<IC>			
IC501	8-759-711-59	IC NJM78L05UA-TE1			
IC502	8-759-100-96	IC UPC4558G2			
IC503	8-759-100-96	IC UPC4558G2			
IC504	8-759-496-41	IC M65850FP-E1			
IC505	8-759-100-96	IC UPC4558G2			
IC506	8-759-701-51	IC NJM2072M			
IC507	8-759-100-96	IC UPC4558G2			
		<INDUCTOR>			
L501	1-469-561-21	INDUCTOR	100UH		
L502	1-469-561-21	INDUCTOR	100UH		
		<TRANSISTOR>			
Q501	8-729-027-53	TRANSISTOR DTC124TKA-T146			
Q502	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX			
		<RESISTOR>			
R503	1-216-295-91	SHORT CHIP	0		
R504	1-216-295-91	SHORT CHIP	0		
R505	1-216-295-91	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remark
R506	1-216-295-91	SHORT CHIP	0		
R507	1-216-089-11	RES-CHIP	47K	5%	1/10W
	1-216-089-91	RES-CHIP	47K	5%	1/10W
R508	1-216-073-91	RES-CHIP	10K	5%	1/10W
R509	1-216-073-91	RES-CHIP	10K	5%	1/10W
R510	1-216-295-91	SHORT CHIP	0		
R511	1-216-295-91	SHORT CHIP	0		
R512	1-216-295-91	SHORT CHIP	0		
R513	1-216-295-91	SHORT CHIP	0		
R514	1-216-025-11	RES-CHIP	100	5%	1/10W
R515	1-216-073-91	RES-CHIP	10K	5%	1/10W
R516	1-216-097-11	RES-CHIP	100K	5%	1/10W
R517	1-216-097-11	RES-CHIP	100K	5%	1/10W
R518	1-216-025-11	RES-CHIP	100	5%	1/10W
R519	1-216-097-11	RES-CHIP	100K	5%	1/10W
R520	1-216-049-11	RES-CHIP	1K	5%	1/10W
R521	1-216-085-11	RES-CHIP	33K	5%	1/10W
	1-216-085-91	RES-CHIP	33K	5%	1/10W
R522	1-216-073-91	RES-CHIP	10K	5%	1/10W
R523	1-216-025-11	RES-CHIP	100	5%	1/10W
R524	1-216-097-11	RES-CHIP	100K	5%	1/10W
R525	1-216-085-11	RES-CHIP	33K	5%	1/10W
	1-216-085-91	RES-CHIP	33K	5%	1/10W
R526	1-216-049-11	RES-CHIP	1K	5%	1/10W
R527	1-216-073-91	RES-CHIP	10K	5%	1/10W
R528	1-216-025-11	RES-CHIP	100	5%	1/10W
R529	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R530	1-216-073-91	RES-CHIP	10K	5%	1/10W
R531	1-216-073-91	RES-CHIP	10K	5%	1/10W
R532	1-216-109-00	RES-CHIP	330K	5%	1/10W
R533	1-216-081-00	RES-CHIP	22K	5%	1/10W
R534	1-216-073-91	RES-CHIP	10K	5%	1/10W
R535	1-216-073-91	RES-CHIP	10K	5%	1/10W
R536	1-216-081-00	RES-CHIP	22K	5%	1/10W
R537	1-216-081-00	RES-CHIP	22K	5%	1/10W
R538	1-216-081-00	RES-CHIP	22K	5%	1/10W
R539	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R540	1-216-097-11	RES-CHIP	100K	5%	1/10W
R541	1-216-081-00	RES-CHIP	22K	5%	1/10W
R542	1-216-081-00	RES-CHIP	22K	5%	1/10W
R543	1-216-081-00	RES-CHIP	22K	5%	1/10W
R545	1-216-073-91	RES-CHIP	10K	5%	1/10W
R546	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R547	1-216-073-91	RES-CHIP	10K	5%	1/10W
R548	1-216-049-11	RES-CHIP	1K	5%	1/10W
R549	1-216-073-91	RES-CHIP	10K	5%	1/10W
R550	1-216-073-91	RES-CHIP	10K	5%	1/10W
R553	1-216-073-91	RES-CHIP	10K	5%	1/10W
R556	1-216-109-00	RES-CHIP	330K	5%	1/10W
R557	1-216-081-00	RES-CHIP	22K	5%	1/10W
		<CARBON>			
RV501	1-227-461-11	CARBON FILM POTENTIOMETER			
RV502	1-227-461-11	CARBON FILM POTENTIOMETER			
RV503	1-227-461-11	CARBON FILM POTENTIOMETER			
		<HARNESS>			
W501	1-962-800-11	HARNESS (EW-001)			

MV-044

Ref. No.	Part No.	Description			Remark
	A-1054-243-A	MV-044 BOARD COMPLETE (K880P: SP/K870P: SP)			
	A-1062-856-A	MV-044 BOARD COMPLETE (K870P: EA)			
	A-1062-882-A	MV-044 BOARD COMPLETE (K870P: BR)			
	A-1063-400-A	MV-044 BOARD COMPLETE (K880P:CH)			
		<CAPACITOR>			
C104	1-164-230-11	CERAMIC CHIP	220PF	5.00% 50V	
C106	1-164-230-11	CERAMIC CHIP	220PF	5.00% 50V	
C107	1-126-964-11	ELECT	10UF	20.00% 50V	
C109	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C110	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C111	1-164-677-11	CERAMIC CHIP	0.033UF	10.00% 16V	
C112	1-164-677-11	CERAMIC CHIP	0.033UF	10.00% 16V	
C113	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C114	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C115	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C116	1-162-964-11	CERAMIC CHIP	0.001UF	10.00% 50V	
C117	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C119	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C120	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C121	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C122	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C123	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C124	1-126-964-11	ELECT	10UF	20.00% 50V	
C125	1-104-660-91	ELECT	47UF	20.00% 16V	
C126	1-104-660-91	ELECT	47UF	20.00% 16V	
C132	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C138	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C139	1-126-964-11	ELECT	10UF	20.00% 50V	
C140	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C141	1-126-964-11	ELECT	10UF	20.00% 50V	
C142	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C143	1-126-964-11	ELECT	10UF	20.00% 50V	
C144	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00% 50V	
C145	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00% 50V	
C148	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00% 50V	
C152	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C153	1-104-660-91	ELECT	47UF	20.00% 16V	
C154	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C155	1-162-964-11	CERAMIC CHIP	0.001UF	10.00% 50V	
C156	1-162-964-11	CERAMIC CHIP	0.001UF	10.00% 50V	
C161	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C165	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C166	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C168	1-104-660-91	ELECT	47UF	20.00% 16V	
C169	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C171	1-104-660-91	ELECT	47UF	20.00% 16V	
C172	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C173	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C175	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C176	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C177	1-165-908-11	CERAMIC CHIP	1UF	10% 10V	
C178	1-165-908-11	CERAMIC CHIP	1UF	10% 10V	
C179	1-165-908-11	CERAMIC CHIP	1UF	10% 10V	
C180	1-165-908-11	CERAMIC CHIP	1UF	10% 10V	
C181	1-165-908-11	CERAMIC CHIP	1UF	10% 10V	
C184	1-164-315-11	CERAMIC CHIP	470PF	5.00% 50V	
C185	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C186	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C189	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C190	1-164-245-11	CERAMIC CHIP	0.015UF	10.00% 25V	
C193	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C194	1-164-245-11	CERAMIC CHIP	0.015UF	10.00% 25V	
C197	1-164-677-11	CERAMIC CHIP	0.033UF	10.00% 16V	
C198	1-162-926-11	CERAMIC CHIP	82PF	5.00% 50V	
C199	1-164-392-11	CERAMIC CHIP	390PF	5.00% 50V	
C202	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C203	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C207	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C209	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C212	1-162-927-11	CERAMIC CHIP	100PF	5.00% 50V	
C213	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C214	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C215	1-165-908-11	CERAMIC CHIP	1UF	10% 10V	
C216	1-104-660-91	ELECT	47UF	20.00% 16V	
C218	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C219	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C220	1-104-660-91	ELECT	47UF	20.00% 16V	
C222	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C223	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C224	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C225	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C227	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C229	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C231	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C232	1-125-889-91	CERAMIC CHIP	2.2UF	10% 10V	
C235	1-162-964-11	CERAMIC CHIP	0.001UF	10.00% 50V	
C236	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C237	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C239	1-104-660-91	ELECT	47UF	20.00% 16V	
C240	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C241	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C243	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C244	1-162-915-11	CERAMIC CHIP	10PF	0.50PF 50V	
C245	1-162-916-11	CERAMIC CHIP	12PF	5.00% 50V	
C246	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C247	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C248	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C249	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C250	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C251	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C252	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C255	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C256	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C257	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C258	1-162-964-11	CERAMIC CHIP	0.001UF	10.00% 50V	
C259	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C260	1-104-660-91	ELECT	47UF	20.00% 16V	
	1-126-947-11	ELECT	47UF	20.00% 35V	
C262	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C263	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C264	1-104-660-91	ELECT	47UF	20.00% 16V	
	1-126-947-11	ELECT	47UF	20.00% 35V	
C265	1-126-964-11	ELECT	10UF	20.00% 50V	
C266	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C267	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	

Ref. No.	Part No.	Description			Remark
C268	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C269	1-104-660-91	ELECT	47UF	20.00% 16V	
	1-126-947-11	ELECT	47UF	20.00% 35V	
C270	1-104-660-91	ELECT	47UF	20.00% 16V	
C273	1-162-927-11	CERAMIC CHIP	100PF	5.00% 50V	
C276	1-125-889-91	CERAMIC CHIP	2.2UF	10% 10V	
C280	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C281	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C501	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C502	1-104-660-91	ELECT	47UF	20.00% 16V	
C507	1-104-660-91	ELECT	47UF	20.00% 16V	
C509	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C510	1-104-660-91	ELECT	47UF	20.00% 16V	
C511	1-104-660-91	ELECT	47UF	20.00% 16V	
C512	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C513	1-104-660-91	ELECT	47UF	20.00% 16V	
C514	1-107-826-11	CERAMIC CHIP	0.1UF	10.00% 16V	
C601	1-164-739-11	CERAMIC CHIP	560PF	5.00% 50V	
C602	1-164-739-11	CERAMIC CHIP	560PF	5.00% 50V	
C603	1-164-218-11	CERAMIC CHIP	180PF	5.00% 50V	
C604	1-164-218-11	CERAMIC CHIP	180PF	5.00% 50V	
C605	1-164-218-11	CERAMIC CHIP	180PF	5.00% 50V	
C606	1-164-218-11	CERAMIC CHIP	180PF	5.00% 50V	
C607	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C608	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C609	1-126-960-11	ELECT	1UF	20.00% 50V	
C610	1-104-660-91	ELECT	47UF	20.00% 16V	
C611	1-104-660-91	ELECT	47UF	20.00% 16V	
C612	1-104-660-91	ELECT	47UF	20.00% 16V	
C613	1-126-934-11	ELECT	220UF	20.00% 16V	
C614	1-162-927-11	CERAMIC CHIP	100PF	5.00% 50V	
C615	1-164-230-11	CERAMIC CHIP	220PF	5.00% 50V	
C616	1-164-230-11	CERAMIC CHIP	220PF	5.00% 50V	
C619	1-162-927-11	CERAMIC CHIP	100PF	5.00% 50V	
C620	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C622	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C625	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C627	1-104-660-91	ELECT	47UF	20.00% 16V	
C628	1-104-660-91	ELECT	47UF	20.00% 16V	
C629	1-104-660-91	ELECT	47UF	20.00% 16V	
C630	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C631	1-104-660-91	ELECT	47UF	20.00% 16V	
C644	1-104-660-91	ELECT	47UF	20.00% 16V	
C771	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C776	1-104-660-91	ELECT	47UF	20.00% 16V	
C778	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C779	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C780	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C782	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C783	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
C784	1-104-660-91	ELECT	47UF	20.00% 16V	
C789	1-115-467-11	CERAMIC CHIP	0.22UF	10.00% 10V	
C790	1-162-970-11	CERAMIC CHIP	0.01UF	10.00% 25V	
		<CONNECTOR>			
CN101	1-815-381-11	CONNECTOR, FPC/FFC 5P			
CN103	1-815-763-32	CONNECTOR, FFC/FPC 24P			
CN104	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN201	1-818-174-11	CONNECTOR, FPC/FFC 13P			
CN204	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN205	1-568-953-11	PIN, CONNECTOR 4P			
CN604	1-568-955-11	PIN, CONNECTOR 6P			
CN771	1-568-937-11	PIN, CONNECTOR 10P			
		<DIODE>			
D508	8-719-071-15	DIODE HZM6.8ZWA1TL			
D509	8-719-071-15	DIODE HZM6.8ZWA1TL			
D601	8-719-914-43	DIODE DAN202K-T-146			
D602	8-719-914-45	DIODE DAP202K			
D604	8-719-988-61	DIODE 1SS355TE-17			
D605	8-719-988-61	DIODE 1SS355TE-17			
		<FERRITE>			
FB176	1-469-670-21	FERRITE	0UH		
FB201	1-469-324-21	FERRITE	0UH		
FB202	1-469-324-21	FERRITE	0UH		
FB203	1-469-324-21	FERRITE	0UH		
FB204	1-469-324-21	FERRITE	0UH		
FB205	1-469-324-21	FERRITE	0UH		
FB206	1-469-324-21	FERRITE	0UH		
FB215	1-469-670-21	FERRITE	0UH		
FB249	1-469-670-21	FERRITE	0UH		
FB251	1-469-670-21	FERRITE	0UH		
FB252	1-469-670-21	FERRITE	0UH		
FB255	1-469-118-21	FERRITE	0UH		
FB290	1-469-118-21	FERRITE	0UH		
FB291	1-469-118-21	FERRITE	0UH		
FB292	1-469-118-21	FERRITE	0UH		
FB293	1-469-118-21	FERRITE	0UH		
FB294	1-469-118-21	FERRITE	0UH		
FB295	1-469-118-21	FERRITE	0UH		
FB525	1-469-324-21	FERRITE	0UH		
FB555	1-469-324-21	FERRITE	0UH		
FB1022	1-469-670-21	FERRITE	0UH		
FB1023	1-469-670-21	FERRITE	0UH		
FB1024	1-469-324-21	FERRITE	0UH		
FB2016	1-414-444-11	FERRITE	0UH		
FB2018	1-414-444-11	FERRITE	0UH		
FB2036	1-469-670-21	FERRITE	0UH		
FB2041	1-469-324-21	FERRITE	0UH		
FL207	1-234-177-21	FERRITE	0UH		
FL208	1-234-177-21	FERRITE	0UH		
FL209	1-233-893-21	FILTER, CHIP EMI			
		<IC>			
IC101	6-704-524-01	IC FAN8036L			
IC102	6-704-471-01	IC CXD9780R			
IC151	6-704-470-01	IC TK11233CMCL-G			
IC201	6-704-472-01	IC CXD9781R (W5991)			
IC202	6-704-261-01	IC TK11225CMCL-G			
IC204	6-804-655-01	IC MBM29LV160BE70TN-D016 (K880P:CH)			
IC205	6-705-866-01	IC BR24L16FJ-WE2			
IC206	6-704-893-01	IC GLT5640L16P-7TC			
IC207	6-705-515-01	IC AK4385VT-E2			
IC208	6-702-302-01	IC TK11133CSCL-G			
IC502	6-701-820-01	IC LA73053-TLM-E			
IC503	8-759-662-86	IC NJM79M05DL1A(TE2)			
IC601	8-759-100-96	IC UPC4558G2			

MV-044

Ref. No.	Part No.	Description			Remark
IC602	8-759-100-96	IC UPC4558G2			
IC603	6-706-025-01	IC HA178L05UA-TL-E			
IC604	6-600-185-01	IC GP1FA553TZOF			
IC774	6-702-302-01	IC TK11133CSCL-G			
		<JACK>			
J501	1-818-223-11	JACK BLOCK, PIN			
JS002	1-216-295-00	SHORT CHIP	0		
JS003	1-216-295-00	SHORT CHIP	0		
LP101	1-780-019-11	WIRE CLIP			
LP601	1-780-019-11	WIRE CLIP			
LP701	1-780-019-11	WIRE CLIP			
		<IC LINK>			
⚠PS771	1-576-509-21	IC LINK	1A	50V	
⚠PS772	1-576-509-21	IC LINK	1A	50V	
		<TRANSISTOR>			
Q168	8-729-424-59	TRANSISTOR UN2212-TX			
Q170	6-550-008-01	TRANSISTOR UM6K1N-TN			
Q171	6-550-653-01	TRANSISTOR QST8TR			
Q504	8-729-421-19	TRANSISTOR UN2213			
Q505	8-729-424-08	TRANSISTOR UN2111			
Q601	8-729-010-08	TRANSISTOR MSB710-RT1			
Q602	8-729-421-19	TRANSISTOR UN2213			
Q603	8-729-010-25	TRANSISTOR MSD601-RT1			
Q604	8-729-424-70	TRANSISTOR UN2217-QRS-TX			
Q605	8-729-010-05	TRANSISTOR MSB709-RT1			
Q606	8-729-421-19	TRANSISTOR UN2213			
Q607	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO			
Q608	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO			
Q609	8-729-424-70	TRANSISTOR UN2217-QRS-TX			
Q610	8-729-010-05	TRANSISTOR MSB709-RT			
Q611	8-729-010-25	TRANSISTOR MSD601-RT1			
Q614	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO			
Q616	8-729-010-05	TRANSISTOR MSB709-RT1			
Q617	8-729-024-89	TRANSISTOR MUN2213T1			
Q772	8-729-048-28	TRANSISTOR 2SD1766-T100-QR			
Q773	8-729-424-08	TRANSISTOR UN2111			
		<RESISTOR>			
R101	1-216-833-11	METAL CHIP	10K	5%	1/10W
R102	1-216-833-11	METAL CHIP	10K	5%	1/10W
R103	1-216-839-11	METAL CHIP	33K	5%	1/10W
R104	1-216-839-11	METAL CHIP	33K	5%	1/10W
R107	1-216-833-11	METAL CHIP	10K	5%	1/10W
R109	1-216-834-11	METAL CHIP	12K	5%	1/10W
R110	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R111	1-216-835-11	METAL CHIP	15K	5%	1/10W
R112	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R114	1-216-833-11	METAL CHIP	10K	5%	1/10W
R117	1-216-834-11	METAL CHIP	12K	5%	1/10W
R119	1-216-841-11	METAL CHIP	47K	5%	1/10W
R120	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R121	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R122	1-218-889-11	METAL CHIP	56K	0.5%	1/10W

Ref. No.	Part No.	Description			Remark
R123	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R124	1-216-831-11	METAL CHIP	6.8K	5%	1/10W
R126	1-216-838-11	METAL CHIP	27K	5%	1/10W
R127	1-216-833-11	METAL CHIP	10K	5%	1/10W
R128	1-216-839-11	METAL CHIP	33K	5%	1/10W
R129	1-218-893-11	METAL CHIP	82K	0.5%	1/10W
R130	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R131	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R132	1-216-833-11	METAL CHIP	10K	5%	1/10W
R133	1-216-864-11	SHORT CHIP	0		
R134	1-216-864-11	SHORT CHIP	0		
R136	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R155	1-216-821-11	METAL CHIP	1K	5%	1/10W
R156	1-216-821-11	METAL CHIP	1K	5%	1/10W
R157	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R158	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R159	1-216-864-11	SHORT CHIP	0		
R160	1-216-809-11	METAL CHIP	100	5%	1/10W
R172	1-216-845-11	METAL CHIP	100K	5%	1/10W
R173	1-216-845-11	METAL CHIP	100K	5%	1/10W
R175	1-216-809-11	METAL CHIP	100	5%	1/10W
R178	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R179	1-216-801-11	METAL CHIP	22	5%	1/10W
R180	1-216-809-11	METAL CHIP	100	5%	1/10W
R181	1-216-821-11	METAL CHIP	1K	5%	1/10W
R182	1-216-841-11	METAL CHIP	47K	5%	1/10W
R183	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R184	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R185	1-216-857-11	METAL CHIP	1M	5%	1/10W
R186	1-216-841-11	METAL CHIP	47K	5%	1/10W
R187	1-216-864-11	SHORT CHIP	0		
R188	1-216-801-11	METAL CHIP	22	5%	1/10W
R189	1-216-801-11	METAL CHIP	22	5%	1/10W
R190	1-216-864-11	SHORT CHIP	0		
R191	1-216-864-11	SHORT CHIP	0		
R192	1-216-841-11	METAL CHIP	47K	5%	1/10W
R194	1-216-864-11	SHORT CHIP	0		
R195	1-216-833-11	METAL CHIP	10K	5%	1/10W
R197	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R198	1-216-821-11	METAL CHIP	1K	5%	1/10W
R199	1-216-835-11	METAL CHIP	15K	5%	1/10W
R201	1-216-864-11	SHORT CHIP	0		
R208	1-216-864-11	SHORT CHIP	0		
R213	1-216-833-11	METAL CHIP	10K	5%	1/10W
R216	1-216-833-11	METAL CHIP	10K	5%	1/10W
R220	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R221	1-216-833-11	METAL CHIP	10K	5%	1/10W
R222	1-216-833-11	METAL CHIP	10K	5%	1/10W
R223	1-216-833-11	METAL CHIP	10K	5%	1/10W
R224	1-216-864-11	SHORT CHIP	0		
R225	1-216-821-11	METAL CHIP	1K	5%	1/10W
R226	1-216-821-11	METAL CHIP	1K	5%	1/10W
R227	1-216-845-11	METAL CHIP	100K	5%	1/10W
R229	1-216-864-11	SHORT CHIP	0		
R244	1-216-836-11	METAL CHIP	18K	5%	1/10W

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
R247	1-216-809-11	METAL CHIP	100	5%	1/10W
R248	1-216-845-11	METAL CHIP	100K	5%	1/10W
R253	1-216-805-11	METAL CHIP	47	5%	1/10W
R258	1-216-809-11	METAL CHIP	100	5%	1/10W
R260	1-216-801-11	METAL CHIP	22	5%	1/10W
R261	1-216-805-11	METAL CHIP	47	5%	1/10W
R263	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R264	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R265	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R266	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R267	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R268	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R272	1-469-836-21	FERRITE	0UH		
R276	1-218-841-11	METAL CHIP	560	0.5%	1/10W
R279	1-216-809-11	METAL CHIP	100	5%	1/10W
R280	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R284	1-216-805-11	METAL CHIP	47	5%	1/10W
R285	1-216-805-11	METAL CHIP	47	5%	1/10W
R286	1-216-805-11	METAL CHIP	47	5%	1/10W
R287	1-216-805-11	METAL CHIP	47	5%	1/10W
R288	1-216-805-11	METAL CHIP	47	5%	1/10W
R289	1-218-916-11	METAL CHIP	750K	0.5%	1/10W
R298	1-216-864-11	SHORT CHIP	0		
R521	1-216-833-11	METAL CHIP	10K	5%	1/10W
R527	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R528	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R529	1-216-833-11	METAL CHIP	10K	5%	1/10W
R530	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R532	1-216-864-11	SHORT CHIP	0		
R533	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R534	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R535	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R547	1-216-864-11	SHORT CHIP	0		
R548	1-216-864-11	SHORT CHIP	0		
R549	1-216-864-11	SHORT CHIP	0		
R554	1-216-864-11	SHORT CHIP	0		
R556	1-216-864-11	SHORT CHIP	0		
R557	1-216-864-11	SHORT CHIP	0		
R575	1-216-864-11	SHORT CHIP	0		
R582	1-216-864-11	SHORT CHIP	0		
R598	1-216-295-00	SHORT CHIP	0		
R605	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R606	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R607	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R608	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R609	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R610	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R611	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R612	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R613	1-216-833-11	METAL CHIP	10K	5%	1/10W
R615	1-216-864-11	SHORT CHIP	0		
R616	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R617	1-216-833-11	METAL CHIP	10K	5%	1/10W
R618	1-216-845-11	METAL CHIP	100K	5%	1/10W
R619	1-216-849-11	METAL CHIP	220K	5%	1/10W
R620	1-216-817-11	METAL CHIP	470	5%	1/10W
R621	1-216-841-11	METAL CHIP	47K	5%	1/10W
R622	1-216-833-11	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R624	1-216-833-11	METAL CHIP	10K	5%	1/10W
R625	1-216-841-11	METAL CHIP	47K	5%	1/10W
R626	1-216-817-11	METAL CHIP	470	5%	1/10W
R627	1-216-817-11	METAL CHIP	470	5%	1/10W
R628	1-216-833-11	METAL CHIP	10K	5%	1/10W
R629	1-216-841-11	METAL CHIP	47K	5%	1/10W
R630	1-216-841-11	METAL CHIP	47K	5%	1/10W
R631	1-216-833-11	METAL CHIP	10K	5%	1/10W
R632	1-216-833-11	METAL CHIP	10K	5%	1/10W
R633	1-216-841-11	METAL CHIP	47K	5%	1/10W
R634	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R635	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R636	1-216-833-11	METAL CHIP	10K	5%	1/10W
R638	1-216-845-11	METAL CHIP	100K	5%	1/10W
R639	1-216-845-11	METAL CHIP	100K	5%	1/10W
R640	1-216-817-11	METAL CHIP	470	5%	1/10W
R641	1-216-817-11	METAL CHIP	470	5%	1/10W
R648	1-216-833-11	METAL CHIP	10K	5%	1/10W
R649	1-216-813-11	METAL CHIP	220	5%	1/10W
R650	1-216-833-11	METAL CHIP	10K	5%	1/10W
R651	1-216-807-11	METAL CHIP	68	5%	1/10W
R652	1-216-833-11	METAL CHIP	10K	5%	1/10W
R653	1-216-821-11	METAL CHIP	1K	5%	1/10W
R654	1-216-821-11	METAL CHIP	1K	5%	1/10W
R655	1-216-833-11	METAL CHIP	10K	5%	1/10W
R656	1-216-821-11	METAL CHIP	1K	5%	1/10W
R657	1-216-833-11	METAL CHIP	10K	5%	1/10W
R658	1-216-833-11	METAL CHIP	10K	5%	1/10W
R659	1-216-833-11	METAL CHIP	10K	5%	1/10W
R660	1-216-841-11	METAL CHIP	47K	5%	1/10W
R661	1-216-817-11	METAL CHIP	470	5%	1/10W
R662	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R664	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R665	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R666	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R667	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R668	1-216-821-11	METAL CHIP	1K	5%	1/10W
R669	1-216-864-11	SHORT CHIP	0		
R684	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R775	1-216-833-11	METAL CHIP	10K	5%	1/10W
R776	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R777	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R787	1-216-864-11	SHORT CHIP	0		
R1015	1-216-809-11	METAL CHIP	100	5%	1/10W
R1018	1-216-864-11	SHORT CHIP	0		
R1021	1-216-864-11	SHORT CHIP	0		
R1026	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1027	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1031	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2019	1-216-809-11	METAL CHIP	100	5%	1/10W
R2026	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2028	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2030	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2031	1-216-805-11	METAL CHIP	47	5%	1/10W
R2032	1-216-805-11	METAL CHIP	47	5%	1/10W
R2033	1-216-805-11	METAL CHIP	47	5%	1/10W
R2034	1-216-805-11	METAL CHIP	47	5%	1/10W
R2036	1-216-295-00	SHORT CHIP	0		

MV-044 POWER BLOCK (SRV1501WW)

Ref. No.	Part No.	Description	Remark
		<NETWORK>	
RB204	1-234-371-21	RES, NETWORK 47X4	
RB205	1-234-371-21	RES, NETWORK 47X4	
RB206	1-234-371-21	RES, NETWORK 47X4	
		<SWITCH>	
S501	1-762-636-11	SWITCH, SLIDE	
		<CRYSTAL>	
X202	1-813-219-11	QUARTZ CRYSTAL UNIT	
⚠	1-478-539-11	POWER BLOCK (SRV1501WW) **********	
		ACCESSORIES **********	
	1-478-675-21	REMOTE COMMANDER (RMT D-169P) (K880P: SP)	
	1-478-675-31	REMOTE COMMANDER (RMT D-170P) (K870P: SP/EA)	
	1-478-675-11	REMOTE COMMANDER (RMT D-169A) (K870P: BR)	
	1-824-933-21	CORD WITH CONNECTOR	
	2-022-377-11	MANUAL INSTRUCTION (BRITISH ENGLISH) (K880P: SP)	
	2-022-377-21	MANUAL INSTRUCTION (CHINESE) (K870P: SP/K880P: SP)	
	2-022-377-31	MANUAL INSTRUCTION (ARABIC) (K870P: EA)	
	2-067-432-11	MANUAL INSTRUCTION (CHINESE) (K870P: CH)	

Ref. No.	Part No.	Description	Remark

Note :
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Replace only with part number specified.

9-874-830-11

Sony Corporation
Home Storage Company

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